MISSOURI RIVER PUBLIC USE ASSESSMENT: FINAL REPORT

Results from the 2004 survey of river users

Steven L. Sheriff, Rochelle B. Renken, and Thomas B. Treiman
Missouri Department of Conservation – Resource Science Division
March 15, 2011

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Cooperating state agencies participating in this study included the Missouri Department of Conservation, Nebraska Game and Parks Commission, Iowa Department of Natural Resources, Kansas Department of Wildlife and Parks, and South Dakota Department of Game, Fish and Parks.

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Executive Summary

- The Missouri Department of Conservation and the Nebraska Game and Parks Commission in cooperation with Kansas Department of Wildlife and Parks, Iowa Department of Natural Resources, South Dakota Game, Fish and Parks, the U. S. Fish and Wildlife Service, and the U. S. National Park Service estimated public use on and along the Missouri River from Gavins Point Dam near Yankton, South Dakota to the river's mouth near St. Louis, Missouri during the 13-month period from January, 2004 through January, 2005. We estimated the:
    - Types and amount of public use
    - Fish and wildlife harvest from the river
    - Socio-demographic characteristics of users
    - The economic value of the river to the users.
- A total of 2,494,740 individual-visits or -days were made to the Missouri River and its tributaries during the 13-month study. This minimum estimate includes use from public accesses and areas, private lands not generally accessible by the general public, fishing tournaments, and excursion boats. If estimates of individual-visits to 32 Lewis and Clark events (Sheriff et al. 2008) are included, then an estimated 2,701,830 individual-visits or -days were made to the river.
- 2,042,980 individual-visits in 1,139,640 party-visits (1.79 individuals/exiting party) came to public accesses and areas.
- The average individual-visitor spent 3.2 hours per individual-visit to public accesses and areas. In total, individual-visits accounted for an estimated 6,520,330 individual-hours of public use at public accesses and areas.
- River users at public accesses and areas reported being involved in 71 different activities, including

    - Sightseeing - 29.23% of estimated total individual-visits
    - Fishing - 23.79% of estimated total individual-visits
    - Boating - 11.90% of estimated total individual-visits.
- Most of the public accesses and areas users' time on or along the river was spent in camping (33.38%), fishing (21.96%), and boating (13.09%).
- The estimates of total economic benefit of the river to public access and area users were between $20.1 million (using the travel cost method) and $38.7 million (using the discrete choice method).
- "Residence" users (those users of the Missouri River or its tributaries who gained access through private land not generally accessible to the public) spent 204,520 individual-days or 73,040 party-days using the river. In total they spent 2,573,560 individual-hours engaged in 53 different activities. Over one-half of this time was spent in "cottage use" (1.7 million individual-hours).
- Other significant public use of the river included users with access from two clubs (St. Joseph Yacht Club and the 4F Flathead Club with 12,830 individual-days of use), fishing tournaments (753 participants and 604 non-participants reported), and three excursion boats (47,303 passengers reported).

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Introduction

The Missouri River is attractive to the public as a place for fishing, hunting, and other water-sports activities. People find it a place of solitude and beauty. The Missouri River also offers private businesses, and local, state, and federal agencies many opportunities to develop facilities and manage the river, its valley and resources, for attracting even more people to the river. To be effective in managing the resource, it is necessary, however, to have information about how the public uses the river and know the demands and desires of these users for planning and management efforts. This basic information about Missouri River public use will allow informed decisions to be made about its management.

At the beginning of the 21st century, there were more places for people to access the Missouri River and its valley than had been available in the previous half century. Various agencies responsible for providing river access, and maintaining and managing land acquired to enhance natural resources were eager to measure the public's use of these resources to better serve the public and facilitate use of the river's resources. As a result, the Missouri Department of Conservation and the Nebraska Game and Parks Commission in cooperation with Kansas Wildlife and Parks, Iowa Department of Natural Resources, South Dakota Game, Fish and Parks, the U. S. Fish and Wildlife Service, and the U. S. National Park Service undertook the Missouri River Public Use Assessment in 2004 and 2005. The goal of the assessment was to determine the amount of public use on the river and along its banks on the lower unimpounded portion from Gavins Point Dam to the river's mouth near St. Louis, Missouri during the 13-month period of January,

2004 through January, 2005 (Figure 1, page 127). Assessment objectives were to 1) determine the types and amount of public use, 2) estimate fish and wildlife harvest from the river, 3) describe socio-demographic characteristics of users, and 4) estimate the economic value of the river to the users.

Background

Humans have used the Missouri River and its valley for over 12,000 years. Archeological sites within the valley or upon its bluffs indicate the region was inhabited by Paleo-Indians around 10,000 B.C. (U. S. Army Corps of Engineers 1981). Along the Mississippi River close to the confluence of the Missouri and Mississippi, archeological evidence of man's activities dates back 11,000 to 12,000 years (O'Brien and Wood 1998). At these Mississippi River sites Clovis points have been found with mastodon, ground sloth, and white-tailed deer bones. More recently, American Indians have an oral history rich with stories of the gifts of food and fiber hunted and gathered within the river valley. For the Sioux and other tribes along the Missouri River, the river was principally used as a source of water, and land along the banks provided shelter from inclement weather, fruits, pasture, and agricultural land. For these American Indians, recreational fishing, swimming, and boating were uncommon activities (Lawson 1982). To them, the river was sacred (Deloria 1982). In contrast, not long after Father Marquette first viewed the river in 1673, explorers and settlers of European descent used the Missouri River valley more as a travel and trading route, and less of a source of food and fiber. French and Spanish traders, trappers, and settlers transported goods and materials on the river for trading with the American Indians and for establishing their villages, such as St. Charles and Le Charrette, yet the valley's natural resources likely supplemented the crops and livestock brought with the first white inhabitants from the East and the Old World.

The journals of Meriwether Lewis and William Clark documented use of the Missouri River as their expedition journeyed upstream during the summer of 1804. Clark wrote

that the boats of travelers they met along the river contained fur and pelts. Other "cajeux" (boats) contained buffalo grease and tallow of which Lewis and Clark purchased 300 pounds (Moulton 1986). As the Corps of Discovery proceeded upstream they also documented villages of settlers along the river. One of these villages was a settlement in Missouri named for Daniel Boone (Moulton 1986 [May 23, 1804]). We can assume the settlers chose sites near the Missouri River because it provided easy access for travel and ready food and fiber. We can also imagine the settlers, especially their children, enjoyed the Missouri River and its banks as a place to relax and refresh themselves. Lewis and Clark also documented a teenage Yankton Sioux boy swimming out to their keelboat to deliver a message near present day Yankton, South Dakota (Moulton 1987 [August 27, 1804]). Further up the river near Pierre, South Dakota, they recorded three Teton Sioux boys swimming in the river to meet them (Moulton 1987 [Sept. 23, 1804]).

Technological advances in the 19th and 20th centuries further changed people's use of the river. The *Independence* was the first steamboat to churn the water of the Missouri River in 1819 (Gillespie 2000) and by 1838, the U. S. Army Corps of Engineers was pulling snags from the Missouri River to enhance navigation and transportation (Lawson 1982). Although steamboats were principally used for the transport of goods and passengers, steamboat travelers also were amazed by the river and what they saw in the valley. Caroline Hopkins Clark spoke of her upstream steamboat journey from St. Joseph, Missouri, to Otoe County, Nebraska (Holmes 1990:157-158). She noted the pleasure of sleeping on the upper deck and seeing the moon and stars as well as "Indians on the bank" (Holmes 1990:157). The introduction of the outboard motor by Ole Evinrude in

1907 (Lemelson – MIT Program, Inventor of the Week Archive, [http://web.mit.edu/invent/iow/evinrude.html, accessed July 17, 2007]) also changed people's ability to move on the river. Small boats now allowed individuals and groups of people to easily go up as well as down the river.

The establishment of the 40-hour work week with the passage of the Fair Labor Standards Act in 1938 and the development of labor-saving devices at home and at work meant Americans had more leisure time. Other changes in American culture led to new attitudes towards the Missouri River. While some still supplement their diets with fish caught in the river or with mushrooms gathered from the valley forests, for most, lives are not dependent upon the river's resources. Americans now use the river and its valley to sustain them in spirit and as a playground for their recreational pursuits.

As use of the Missouri River has changed from primarily consumption to entertainment, it has been increasingly important for state and federal agencies to try to gauge the amount of use of this resource. Information about the public's use of the river has informed decisions on where to develop public access to the river, how to set fishing and hunting regulations, and where to allocate funding and staff to provide more opportunities for enjoying the river and its resources.

One of the earliest formal investigations of public use on the lower Missouri River was performed by Gillespie and Lind in 1973. Gillespie and Lind (1974) focused their attention on the river's reach from the mouth to Rulo, Nebraska. They estimated that in

that year people spent 1,018,719 recreation days on the river, of which 533,896 recreation days were spent fishing. They also estimated that river users made an average of 33 visits per year to the river, and traveled an average of 19 miles to get to the river. Visitors reported that boating (26% of annual activity) and relaxing by the river (21% of annual activity) were their two greatest uses of the river. Sightseeing, fishing, picnicking, waterskiing, and swimming were also frequent activities. Gillespie and Lind also noted that people used the river at all times of the day or night.

A decade after Gillespie and Lind's work, a comprehensive survey of Missouri River public use was performed by the Missouri Department of Conservation. Fleener (1989) examined public use of the river from its mouth up to the Iowa-Missouri border during the period of August 1983 through August 1987. He identified 40 different uses of the river. Fishing by pole and line, trotline, and hoopnets were the most popular activities. Fleener estimated fishing accounted for 39% of the visits to the river and 61% of the hours spent on the river. Approximately 80% percent of the visitors traveled less than 25 miles to come to the river. Fleener also estimated the annual economic net benefit of public use for this stretch of the river was just over $1.9 million (Fleener 1989:33). More recently, Brown (1992) used Fleener's data to estimate the economic impact of the Missouri River, and estimated total expenditures by river users at $5.4 million and that river use generated $10.7 million for businesses (1990 dollars).

More recent studies of Missouri River public use have evaluated the fishing, hunting, and boating pressure on stretches of the river in and adjacent to Nebraska. Mestl (2001)

estimated that anglers spent 55,047 hours fishing on a stretch of the river from the Bellevue, Nebraska bridge (river km 968; river mile 601) to Camp Creek (river km 883; river mile 549) during April through September 15, 2000. He estimated 23,853 fish were caught by anglers during this period. In another study, Mestl et al. (2001) estimated recreational use in a stretch of the river just below Gavins Point Dam near Yankton, South Dakota to the mouth of the Big Sioux River. The authors noted that recreational users spent about 154,853 hours within a zone 2 km (1.25 miles) immediately downstream of Gavins Point Dam and about 126,195 hours in the remainder of the study stretch of the river during April through December 2000. Ninety-five percent of the total recreation hours in the zone just downstream of Gavins Point Dam were spent fishing. Fishing (49% of recreation hours) and boating (45% of recreation hours) were nearly equal recreational pursuits in the study's downstream segment below this zone. This downstream segment was part of the U. S. National Park Service's Missouri River National Recreation River. In this survey, vehicles from 29 different states were observed at river accesses, and river users reported using an access at least eight times in a year (Mestl et al. 2001). In a related study, Mestl (2002) estimated Missouri River anglers spent 22,131 hours fishing from Camp Creek to the Nebraska-Kansas state line during April through mid-October 2001. He also estimated that over 8,000 fish were caught on that stretch of the river during his study. All of these studies reflect heavy recreational use of that portion of the lower Missouri River.

In the decade and a half since Fleener finished his comprehensive look at public use on the lower Missouri River, the river and its valley have changed in appearance and

accessibility. The 1993 flood and subsequent high water events in 1995 and 1996 provided opportunities for some of the alluvial valley to be transformed from land separated from the river by levees to land open to rising river levels. It was uneconomical to reclaim portions of the valley bottom that had been covered by deep sand because of breaks in levees during the 1993 flood. Federal and state agencies purchased some of this property and established fish and wildlife refuges, parks and conservation areas. These purchases resulted in more parcels of land that were now open to the public. For example, the U. S. Fish and Wildlife Service has purchased over 6,400 ha (16,000 acres) since 1994 to make up the Big Muddy National Fish and Wildlife Refuge between St. Louis and Kansas City, Missouri (U. S. Fish and Wildlife Service 2011). In addition, new river accesses or boat ramps have been developed and these accesses have provided people with additional places to bank fish, relax, or launch a boat into the river. In a separate effort, the U. S. Army Corps of Engineers purchased land in the valley to mitigate the impacts of past channelization and bank stabilization work on the river. These mitigation lands have been open to the public for various uses, such as hunting, mushroom gathering, and fishing. In all, by 2004, a river user could pick from 20 more parcels of public property and 17 new accesses than they could at the time of Fleener's study.

Study Area

The Missouri River, one of the contiguous United States' major rivers, stretches for 3,768 km (2,340 miles) from its beginnings in the Rocky Mountains in Montana to its confluence with the Mississippi River near St. Louis, Missouri. The Missouri River drains one-sixth of the United States and its watershed covers 1,371,000 km^2 (529,350 $mile^2$) (Galat et al. 1998; Galat et al. 2005).

The reach of the Missouri River we studied is a 1,305-km (811-mile) segment stretching from Gavins Point Dam at Yankton, South Dakota to the river's mouth at St. Louis, Missouri. This portion forms parts of the borders of South Dakota, Nebraska, Iowa, Kansas, and Missouri (Figure 1, page 127). This unimpounded portion of the river is comprised of three sections that vary in length and types of engineering structures. The lower 1,183 km (735 miles) of the river from Sioux City, Iowa to the river's mouth is channelized with stone dikes stretching into the river and revetment along its banks. This portion is regarded as the river's navigation channel. The river section upstream of the navigation channel from river km 1,183 to 1,212 (river mile 735 to 753) also contains dikes and revetment, but is not considered part of the navigation channel. This portion of the river stretches from Sioux City to just below Ponca, Nebraska. The section of the river from river km 1,212 (river mile 753) to Gavins Point Dam is within the National Wild and Scenic River System of the U. S. National Park Service. This portion, called the Missouri National Recreational River, has a semblance of a natural, braided river channel with sandbar complexes and many shallow channels.

In 2003, we identified 378 accesses located along or near our study stretch of the Missouri River as places where people could easily reach the river. One hundred twenty-eight of these accesses were more established and had formal names and designations (Table 1, page 85). Most of these major accesses were under public ownership, while a small number (11) were privately owned. Some private accesses, such as Cooper's Landing at Easley, Missouri, were free to the public, while others such as Sandpiper Marina at Omaha, Nebraska, required a fee for river access (Table 1, page 85). In addition, eleven of the 128 major accesses were on Missouri River tributaries which allowed people easy access to the Missouri River, and two other accesses on the Mississippi River provided ready access to the mouth of the Missouri River. To maintain consistency with Fleener's (1989) effort, we included public use on the Missouri River's major tributaries to the extent influenced by the water levels in the Missouri River. For example, we included users of Maple Island Access just below Lock and Dam 26 on the Mississippi River. We also included the Gasconade River upstream through Gascony Village, the Osage River upstream to Mari-Osa Access, Crooked River at the access on Buffalo Road (Ray County, Missouri), the Platte River up to the Schimmel City Access (Platte County, Missouri), and the Nishnabotna River up to Watson Access. Furthermore, if a user actually gained access and reported use of a tributary from the Missouri River or one of its public accesses, this usage was included as a part of our efforts. The remaining 250 lesser-used accesses oftentimes did not have boat ramps, did not usually have formal names, and consisted of places just off county roads or by bridges where people could reach the river along a well-worn trail.

Of the 128 major river accesses, we focused special attention on seven major conservation areas and National Wildlife Refuges. These areas included the Missouri Department of Conservation's Columbia Bottom Conservation Area near St. Louis, Grand Pass Conservation Area between Miami and Waverly, Worthwine Island Conservation Area near St. Joseph, Bob Brown Conservation Area near Forest City, Thurnau Conservation Area near Craig, and the U. S. Fish and Wildlife Service's Boyer Chute National Wildlife Refuge near Fort Calhoun, Nebraska and DeSoto National Wildlife Refuge near Missouri Valley, Iowa.

People also had homes, summer cottages, camping areas, fishing and yacht clubs, and frontage property along or close to the river's bank. These privately owned lands offered access to the Missouri River for family, friends, and lessees of these lands. For this study, we identified 1,396 families or groups who had primary access to these types of locations within our study stretch of the river.

Users of any river focus on the water within the system and use may vary with factors, such as water level and flow. Because we studied river use for only 13 months, we cannot describe how river use changed with varying levels of river flows and heights. We do, however, report the mean river stages and flows that were observed at 13 U. S. Geological Survey river gauges between the mouth of the Missouri River and Gavins Point Dam during the study (Table 2, page 88). We display the variability in mean river flow by 14, 4-week periods during January 3, 2004 through January 28, 2005 (Figure 2, page 128).

Methods

Prior to collecting data about Missouri River public use in 2004-2005, we used expert opinion and information gathered from flights conducted in 2002 and 2003 to identify points of user access to the Missouri River. These observations helped us gain a sense for the amounts and types of use by time of day and season of year. Based upon these observations we divided river accesses into five major components for this study: 1) public accesses and areas, 2) private lands without general public access, 3) fishing tournaments, 4) cruise operations, and 5) Lewis and Clark bicentennial commemoration events. We then designed sampling strategies to estimate river use for each component. This report contains estimates from the first four of these components. Estimates of the number of people visiting Lewis and Clark bicentennial commemoration events (occurring at accesses that were included as a part of greater the Missouri River Public Use Assessment) were reported by Sheriff et al. (2008).

Public Accesses and Areas - Sampling Efforts at Accesses, Bus-Routes and Areas

Public accesses and areas, which allowed the general public ready access to the Missouri River, consisted mainly of parks, boat ramp sites, conservation areas and refuges. We classified all of these locations as accesses with greater use or accesses with lesser use. To aid in our sampling efforts, accesses with greater public use throughout the year were considered individual sample units. Lesser-used public accesses that were close to one another and typically had boat ramps were often placed together in a sample unit, called an access group (Fleener 1989; Pollock et al. 1994). Other lesser-used accesses, which

lacked a developed boat ramp and often located in rural settings or remote urban locations, were grouped together into a bus route (Robson and Jones 1989; Pollock et al. 1994). In addition, several individual bus routes were further combined into a bus-route group for sampling purposes.

The status of an access sometimes changed during the study and thus the method used to sample it changed. An access might have been treated as a sample unit by itself during one part of the year, but then was included in a bus route during another part of the year. The change in status depended on the anticipated public use of the access or the number of clerks available to conduct the counts and interviews. For example, Mulberry Bend access in Nebraska was placed in a bus route with four other accesses for sampling during winter months, but was removed from the bus route and placed within an access group that included Brooky Bottom Park and St. Helena Access during April through October when we expected river use would increase at these lesser used accesses.

The sampling of public use at individual access sites or in access groups was fairly straightforward. Public use was sampled by having a survey clerk count and interview parties as they were leaving an access at an assigned date and time interval (a half-day). We called this methodology the access method.

The bus-route method of sampling was more complicated. A survey clerk drove to a series of accesses in a prescribed direction of travel and time using certain roads. The direction of travel and the starting location were selected at random. At each river access

point on the route, the clerk would wait a prescribed amount of time and interview any exiting visitors. The amount of time a clerk would wait at an access point depended upon the probability of use assigned to the access. The clerk also recorded the number of vehicles at the access during the waiting time. An entire bus route sample with 2 to 11 points (lesser-used accesses grouped into a bus route) was performed within a half-day period. The clerk might or might not end this half-day at the same access point at which they started.

Access Method Using a Systematic Sampling Approach for Interviewing Parties

At several of the accesses and areas we anticipated that the number of exiting parties might be so large that they could overwhelm one or two clerks using our standard access method. When we could anticipate this greater amount of use at these accesses and areas, we used a systematic sampling approach with two random starts (Shiue 1960) to subsample the exiting parties for obtaining interviews from individuals. We divided the anticipated number of parties leaving from a location during the sample period into groups of *k* units each. We then selected two random integer numbers from the interval one through *k*. For example, if we expected heavy use at an access on a weekend afternoon, we might set *k* to 20, and from a random number generator, the numbers 2 and 17 might have been selected. The clerk(s) would then stop and interview the 2nd party to leave the access during that sample period. The next party to be stopped and interviewed would be the 17th party to exit during the sample period. The 22nd party leaving the access would be stopped and interviewed and it would be grouped with the 2nd party to comprise the first systematic sample. The 37th party leaving the access would also be

stopped and interviewed and this party would be grouped with the 17th party to comprise the second systematic sample. If a selected party refused to be interviewed, the clerk intercepted the party following the refusing party to serve as a substitute for the selected party. The clerk(s) also recorded the total number of parties exiting during the sample period. Thus, we knew the total number of possible parties represented by each systematic sample. To assist the clerks in using this method and in keeping track of which parties to interview, we only used 5, 10, and 20 for the values of *k*.

We used this systematic sampling with two random starts approach at a limited number of accesses or areas. We used it at N.P. Dodge Park (both the marina and the public access ramps) from May 22 through October 8, 2004, at DeSoto National Wildlife Refuge and Columbia Bottoms Conservation Area from May 22, 2004 through January 28, 2005, at the two accesses immediately below Gavins Point Dam during the paddlefish snagging season from October 1 through October 31, 2004, and at Haworth Park's boat ramp at Bellevue, Nebraska and at Randall Schilling Wildlife Management Area from May 22 through October 8, 2004.

Sampling Strata and Scheduling

For the access and bus-route methods, our 13-month study was partitioned into fourteen, 4-week sample intervals, starting on January 3, 2004 and ending on January 28, 2005 (Table 3, page 89). Days within each 4-week sample interval were further partitioned into weekdays (Monday – Friday) and weekend (Saturday and Sunday) strata. The holidays of President's Day, Memorial Day, and Labor Day were included in the

weekend stratum. We did not include Thanksgiving Day and Christmas Day as possible sample dates; therefore, our estimates of public use at the public accesses and areas do not account for any use on those two holidays.

Each day was further divided into two half-day sample periods. One period began 30 minutes before sunrise and ended at noon (or 1:00 PM during Central Daylight Savings Time [CDT]). The other period started at noon (or 1:00 PM CDT) and ended 30 minutes after sunset. No sampling was done during the period from 30 minutes after sunset to 30 minutes before sunrise due to concerns about clerk safety. In Fleener's (1989) study on the lower Missouri River within Missouri, recreational use of the river at night was believed to have accounted for 1-5% of the total river use at public accesses.

Within each 4-week sampling interval, half-day sample periods within each stratum (weekday or weekend) were drawn using the Rao-Hartley-Cochran method (Rao et al. 1962; Cochran 1977) for unequal probability sampling without replacement. Clerks were then assigned to these selected units to collect information from visitors using the river. Four to eight of these half-day periods (normally six) were drawn for sampling public use during a weekday stratum and three to five periods (normally four) were drawn for a weekend stratum. For bus routes, accesses with greater use, and access groups, unequal probabilities for each half-day period within each 4-week sample interval were assigned based on the anticipated number of exiting parties within each period. In other words, if we suspected many people might be using the river at an access during a summer holiday afternoon, such as Memorial Day, we gave the afternoon/evening half-day period on

Memorial Day a greater weight in the draw of samples than other dates and times within the weekend stratum during the sampling interval. If we had situations where accesses or bus routes had been grouped together for sampling purposes, we would assign unequal probabilities to each access or bus route within a group. In this situation, each half-day probability was multiplied by the probability assigned to each access to obtain the probability used to conduct the random draw using the Rao-Hartley-Cochran method. These unequal probabilities for half-day periods and accesses or bus routes were our best guesses as to when users would most likely leave the river. These guesses were based upon the information we had gathered from our pre-study flights along the river and from knowledgeable people who were familiar with the accesses and areas.

Information Gathered During a Sample

Clerks asked users a series of questions (Appendix A, page 137) to gather information about activities users engaged in, time spent in those activities, their frequency of Missouri River use since the study's inception, whether the user had been interviewed during an earlier trip to the river, their harvest of fish and wildlife, their home zip codes, and their socio-demographic characteristics. They also were asked an economic valuation question. (An example of the form clerks used to record this information is in Appendix B, page 139.) Interviewed individuals were handed a card with categories for responses when asked about their socio-demographic characteristics (Appendix C, page 140). When clerks finished an interview, river users were given a thank-you card which provided further information about the study and a phone number for contacting us with complaints or questions about the study (Appendix D, page 141).

We did exclude two types of public use from our efforts. We did not examine commercial barge use of the river or estimate the number of people who were on the river as a part of their employment. Clerks did not count parties where the sole activity of all party members was considered to be a "work trip." We defined "work trips" as parties of people who were paid for the work or activities they performed on or along the river. Examples of these parties included government biologists, engineers, and commercial barge workers. However, if someone spent part of their time working and another part of their time engaged in a recreational activity, such as fishing, hunting, or sightseeing while working on the river, we did include their recreational activities as well as account for their work activity in our estimates of use.

Clerks using the access method, except on the seven areas, also recorded the number of vehicles at the access at the beginning of the period, the number of vehicles at the access at the end of the period, the number of exiting vehicles in which the occupants were interviewed, and the number of exiting user vehicles in which the occupants were not interviewed. (They did not count vehicles or parties that were considered as a "work trip" as described above.) Clerks recorded the above information on the access summary form (Appendix E, page 142).

A similar summary form was used by clerks at the seven areas (Appendix F, page 143); however, the area summary form did not include the number of vehicles on the area at the start or end of the clerk's work shift. A survey clerk could not know how many vehicles

were on an area at the beginning or end of their shift because they waited at the entrance to the area and were physically unable to see all of the area from this vantage point.

For bus routes, the summary form, which we called the vehicle count form, was more complex (Appendix G, page 144). Each vehicle or party was recorded individually upon the arrival of the survey clerk at each access point within the bus route. The clerk was required to make an educated guess if the party was a "known" user of the river or an "unknown" user (possible non-user) of the river. This differentiation of users and non-users was necessary because these minor accesses along the river were often used by the public as a parking lot during the day while the occupants were doing non-river use activities, such as commuting or working in nearby fields or businesses. Clerks judged the status of the party or vehicle based upon clues they could see about the vehicle or upon their past observations at that site. For example, if the vehicle had a boat trailer attached, a clerk might classify the party as a known river user. However, if a set of vehicles were parked in the lot away from the river and very near a business or casino, then the clerk might classify these vehicles as unknown vehicles. Clerks classified vehicles or parties in this manner to obtain a more accurate estimate of the number of parties using the river (see the bus route statistical methods below.)

Clerks also recorded the following information for each vehicle or party at a bus route access point: vehicle license plate number or description of the party, vehicle or party arrival time, vehicle or party departure time, and whether or not a party was interviewed. The vehicle license plate number or a description of the party was recorded to help us

determine if the parties had been at the access point at the start of the work shift and again at the end of the shift for the clerk. If a vehicle or party was already at a bus route access point when the clerk arrived, the clerk recorded the party's arrival time as either the scheduled starting time for this access point or the clerk's arrival time, whichever was later. If the vehicle or party arrived while the clerk was waiting at the access point, then the clerk would record this time as the arrival time. For the party's departure time, the clerk recorded the time the party left the access point or the time that the clerk was scheduled to leave, whichever time was earliest. When parties left the access point before the end of the wait time, the clerk attempted to interview them. The clerk recorded the true status of the party (user or non-user) during the interview. The clerk also recorded whether or not an interview had been conducted with the exiting party. Clerks did not interview or count parties or vehicles that were considered "work trips."

Clerks also recorded information used to determine if a sample was missing or if conditions during the sample period possibly influenced river use. Clerks recorded information about the weather on both the summary form for the access method and the vehicle count form for the bus-route method. If clerks could not work any or part of a sample period, they recorded their reason. All clerks were also asked to record their name, date and time of the assigned sample period, and other pertinent information about the access point on the access summary sheets or vehicle count forms.

Statistical Methods

Counts of exiting parties and interview information collected by the clerks were coded and entered electronically. Data entry was done in two passes with the second pass verifying the initial entry and correcting any discrepancies. Data were subjected to an intensive search for errors that clerks or data entry staff might have injected. These searches and cleaning of the data were done using logic algorithms. For example, someone indicating that this was their first trip to the Missouri River since January 3, 2004, could not logically indicate that they had been previously interviewed by one of our clerks. We also made some assumptions about incomplete data. For instance, sometimes clerks would collect trip information from a party but only record information about party members if their information was different from that provided by the first person interviewed in the party. In such a case, we assumed that all other party members for whom no information was recorded were engaged in the same activities and for the same amount of time as the first party member interviewed.

Each sample period selected within a stratum using the Rao-Hartley-Cochran method for unequal probability sampling without replacement (Rao et al. 1962; Cochran 1977:266) was considered the primary unit for analysis. The estimated number of parties exiting the river during a stratum was the primary characteristic of interest. Data from parties interviewed during the sample period under the access method and the bus-route method were treated differently. Within the access method responses from interviewed parties were considered secondary units (i.e. within sample period sampling units). For the bus-

route method, the responses from interviewed parties were treated as an independent random sample separate from party or vehicles counts at accesses.

Estimates of Use from the Access Method.

For the access method, estimates of use were generated differently depending upon whether data were gathered as clerks attempted to interview all exiting parties (Access Estimate 1) or if clerks used systematic sampling in interviewing exiting parties (Access Estimate 2).

Access Estimate 1

At most accesses, clerks attempted to interview every exiting party. If a party refused to be interviewed or left while the clerk(s) was (were) interviewing another party, we assumed the parties not interviewed were missing completely at random and the responses of interviewed parties would represent the responses of those parties not interviewed (Little and Rubin 2002). In this situation,

Equation 1

$$\hat{\bar{y}} = \frac{\sum_{j=1}^{m} y_j}{m},$$

where $\hat{\bar{y}}$ was the average response for parties interviewed during the sample period, y_j was the response for the j^{th} party interviewed in terms of number within the party indicating the response out of m parties interviewed during the sample period. The estimated variance of $\hat{\bar{y}}$ was derived by:

Equation 2

$$\widehat{var}(\hat{\bar{y}}) = \left(\frac{M-m}{M}\right)\frac{\sum_{j=1}^{m}\left(y_j - \hat{\bar{y}}\right)^2}{m-1},$$

where M is the number of parties counted leaving the access or area.

Access Estimate 2

Systematic sampling with multiple random starts was the same as conducting a cluster sample (Lohr 1999:161). We used a two-stage cluster sampling method (Lohr 1999) for obtaining within sample period estimates of party averages ($\hat{\bar{y}}$), because sometimes the number of parties leaving the access was not the same for all possible random starts for the systematic sample or not all selected parties within one of the systematic samples were interviewed. We used:

Equation 3

$$\hat{\bar{y}} = \frac{\frac{k}{n}\left(\sum_{i=1}^{n} M_i \frac{\sum_{j=1}^{m_i} y_{ij}}{m_i}\right)}{TPC},$$

and its estimated variance of $\hat{\bar{y}}$ was derived by:

Equation 4

$$\widehat{var}(\hat{\bar{y}}) = \frac{\left[k^2\left(\frac{k-n}{k}\right)\frac{s_t^2}{n} + \frac{k}{n}\sum_{i=1}^{n} M_i^2\left(\frac{M_i - m_i}{M_i}\right)\frac{s_i^2}{m_i}\right]}{TPC^2},$$

where

Equation 5

$$s_t^2 = \frac{\sum_{i=1}^{n}\left[M_i \frac{\sum_{j=1}^{m_i} y_{ij}}{m_i} - \left(\sum_{i=1}^{n} M_i \frac{\sum_{j=1}^{m_i} y_{ij}}{m_i}\right)\right]^2}{n-1},$$

and

Equation 6

$$s_i^2 = \frac{\sum_{j=1}^{m_i}\left(y_{ij} - \frac{\sum_{l=1}^{m_i} y_{il}}{m_i}\right)^2}{m_i - 1}.$$

In this estimator, $\hat{\bar{y}}$ represents the average response for parties interviewed during the sample period, and y_{ij} was the response for the j^{th} party interviewed in the systematic sample for the i^{th} random start out of n random starts drawn from k possible starts. y_{ij} is the number of members of the party indicating a particular response to the question. In the equations, m_i is the number of parties interviewed during the sample period when a maximum of M_i could have been interviewed in the ith systematic sample. TPC is the total number of parties clerks counted as leaving the access during the sample period.

Obtaining Estimated Totals for the Access Method.

The within-sample period means on a party basis along with their associated estimates of variance represented the second stage or the secondary sampling units. These estimates were then expanded to represent the use during the sample period. This was done by multiplying the estimates by the number of parties exiting during the sample period. Therefore,

Equation 7

$$\hat{\boldsymbol{y}} = \hat{\boldsymbol{C}}\hat{\bar{\boldsymbol{y}}},$$

and

Equation 8

$$\widehat{\boldsymbol{var}}(\hat{\boldsymbol{y}}) = \hat{\boldsymbol{C}}^{\boldsymbol{2}}\widehat{\boldsymbol{var}}(\hat{\bar{\boldsymbol{y}}}),$$

where $\hat{C}$ was the (estimated) total number of parties exiting during the sample period. $\hat{C}$ was not known in every case, because a clerk might have had an emergency and had to leave the access before the sample period was completed or they arrived at the access too late to get a complete count. If the time missed in the sample period was greater than 8 minutes, we increased the observed count, C, by the proportion of time missed in the

sample period to obtain $\hat{C}$. However, if the access was evacuated for some reason during the sample period, then we used the count that the clerk recorded for the time that users and they were allowed to be at the access. For example, if a tornado warning or high winds required river users and clerks to evacuate the access, C, the number of exiting parties counted by the clerk while still working at the access, was used as an estimate of $\hat{C}$. We also used this same procedure during the winter when snow and ice made it impossible for users and clerks to be able to safely travel to or from the access site.

The sample period represented the primary unit and $\hat{y}$ represented an estimate of the amount of river use for that period. Multiple sample periods were drawn for each stratum using the Rao-Hartley-Cochran method (Cochran 1977). These multiple periods then represented the entire stratum for a 4-week sample interval. To make notation easier, we add a subscript g to $\hat{y}$ and $\widehat{var}(\hat{y})$ to represent the individual estimates within each secondary sampling unit, so $\hat{y}_g$ now represents the value for the g^{th} sampling unit, and an estimate of its variance is $\widehat{var}(\hat{y}_g)$. Using the two-stage estimator for the Rao-Hartley-Cochran method (Cochran 1977:309), the estimate for a stratum, $\hat{y}_h$, was

Equation 9

$$\hat{\boldsymbol{y}}_{\boldsymbol{h}} = \sum_{g=1}^{n} \frac{\boldsymbol{Z}_{\boldsymbol{g}}}{\boldsymbol{z}_{\boldsymbol{g}}} \hat{\boldsymbol{y}}_{\boldsymbol{g}},$$

and

Equation 10

$$\widehat{\boldsymbol{var}}(\hat{\boldsymbol{y}}_{\boldsymbol{h}}) = \frac{\left(\sum_{g=1}^{n} \boldsymbol{N}_{\boldsymbol{g}}^{\boldsymbol{2}} - \boldsymbol{N}\right)}{\left(\boldsymbol{N}^{\boldsymbol{2}} - \sum_{g=1}^{n} \boldsymbol{N}_{\boldsymbol{g}}^{\boldsymbol{2}}\right)} \sum_{g=1}^{n} \boldsymbol{Z}_{\boldsymbol{g}} \left(\frac{\hat{\boldsymbol{y}}_{\boldsymbol{g}}}{\boldsymbol{z}_{\boldsymbol{g}}} - \hat{\boldsymbol{y}}_{\boldsymbol{h}}\right)^{\boldsymbol{2}} + \sum_{g=1}^{n} \frac{\boldsymbol{Z}_{\boldsymbol{g}}}{\boldsymbol{z}_{\boldsymbol{g}}} \widehat{\boldsymbol{var}}(\hat{\boldsymbol{y}}_{\boldsymbol{g}}).$$

For the Rao-Hartley-Cochran method (Cochran 1977), the total number of possible sample periods available (*N*) to be drawn from stratum *h* was divided into *n* groups, which was the sample size. Each sample period has its assigned probability of being sampled, z_g, therefore, Z_g was the sum of these z_g probabilities for the g^{th} group. Based upon the individual probabilities of the sampling units assigned to the g^{th} group, one of the sampling units was drawn based upon its probability, z_g, of being selected in the sample. Its resulting inclusion probability was then $z_g/Z_{g.}$ N_g was the number of sample periods available in the g^{th} group.

As an example, assume that we wish to draw a sample size of 2 (*n*) from a population of size 5 (*N*). Each unit in the population has a probability of 0.1, 0.2, 0.3, 0.3, and 0.1, corresponding to the ordering of units in the population. At random, the first, fourth, and third units were assigned to the first group (g = 1), and the second group (g = 2) contained the second and fifth units. N_1 would be 3, and N_2 would be 2. From the first group, Z_1 is 0.7, and the second group has Z_2 being 0.3. Therefore, in the first group, the first item within the group has a $z_1/Z_{1.}$ or 0.1/0.7 probability of being drawn from this group. The other two units in this group each have a probability of 0.3/0.7 of being drawn. Note that the sum of these inclusion probabilities would add to 0.7/0.7 or 1.0. For this example, let us have the third unit in the first group and the second unit (i.e., 0.1) in the second group be drawn using the Rao-Hartley-Cochran method (Cochran 1977:266-267). Therefore, their respective inclusion probabilities, $z_g/Z_{g.}$, would be 0.3/0.7 and 0.1/0.3.

In some cases, we did not have enough clerks available to work all the assigned sample periods. In these situations if we were able to obtain information from the clerks for at least two of the other sample periods drawn for the stratum, we obtained estimates using the following estimator (David Bowden, Colorado State University, personal communication):

Equation 11

$$\hat{y}_h = n\frac{\sum_{g=1}^{f}\frac{Z_g}{z_g}\hat{y}_g}{f},$$

where *f* was the number of sample periods in which the clerks obtained information out of the *n* sample periods originally selected. The estimated variance of $\hat{y}_h$ was then

Equation 12

$$\widehat{var}(\hat{y}_h) = n^2\frac{n-f}{n}\frac{\frac{\sum_{g=1}^{f}\left(\frac{Z_g}{z_g}\hat{y}_g - \hat{y}_h\right)^2}{f-1}}{f} + \frac{n}{f}\left[\frac{\left(\sum_{g=1}^{f}N_g^2 - \tilde{N}\right)}{\left(\tilde{N}^2 - \sum_{g=1}^{f}N_g^2\right)}\sum_{g=1}^{f}\tilde{Z}_g\left(\frac{\hat{y}_g}{\tilde{z}_g} - \hat{y}_h\right)^2 + \sum_{g=1}^{f}\frac{\tilde{Z}_g}{\tilde{z}_g}\widehat{var}(\hat{y}_g)\right],$$

where $\tilde{N} = \sum_{g=1}^{f}N_g$. Z_g and z_g for each of the *f* sample periods in which clerks were able to obtain information had to be adjusted as if these were the only sample periods drawn for the stratum to obtain $\tilde{Z}_g$ and $\tilde{z}_g$. This was done by setting $\sum_{g=1}^{f}\tilde{Z}_g = 1$. We used

Equation 13

$$\tilde{Z}_g = \frac{Z_g}{\sum_{l=1}^{f}Z_l}$$

and

Equation 14

$$\tilde{z}_g = \tilde{Z}_g \frac{z_g}{Z_g}.$$

To obtain estimates for all strata or any number of strata, we summed together estimates from the strata of interest. This was done by using

Equation 15

$$\hat{y}_t = \sum_h \hat{y}_h.$$

The estimated variance of $\hat{y}_t$ was then

Equation 16

$$\widehat{var}(\hat{y}_t) = \sum_h \widehat{var}(\hat{y}_h).$$

The standard error of any estimate was obtained by finding the square root of the estimated variance of the estimate.

Obtaining Estimated Totals for Bus-Route Method.

In the bus-route method, estimates of river use were compiled from pooled interview information within each stratum. We pooled interview information available across all accesses within each stratum for several reasons. First, because accesses included in a bus route had low use and clerks waited only a short period of time at each access during a sample period, we gathered few if any interviews from parties leaving the river at most accesses for any stratum. Second, many of the interviews collected on bus routes were done with users who had not finished their trip to the river (an incomplete trip). Clerks conducting interviews with these "incomplete trip" users collected the following information: user demographic characteristics, previous visitation to the river and encounters with the interview process, their possession of hunting/fishing/trapping

permits, and their home zip code, and distance from home. Clerks did not ask about these user's activities, amount of time spent in each activity, and about their fishing/hunting success, but this information was collected from those exiting parties who had completed their trip. From these interviews, we pooled interviews within the party to obtain an independent per party estimate for the stratum.

Using the information from the vehicle count forms, we made four different estimates from the bus route data: 1) the total number of parties of users and non-users at the access; 2) the total number of party-hours of access use by users and non-users of the river; 3) the total number of parties using the access or river (users) within a group of bus routes; and 4) the total number of party-hours of river use by the users following Robson and Jones (1989; Pollock et al. 1994). Estimates of total number of party-hours of access use by the users from this method were different from estimates of total hours of use derived from information provided by interviewed parties. The latter estimates were based on individual users and the amount of time they indicated that they were involved in each activity. These estimates are equivalent in definition to those obtained from the data collected using the access method, and are the estimates reported in the Results section. The former estimates are based on the amount of time that the parties were recorded by the clerks as being at the access site, and are not part of this report.

To obtain an estimate for any one of the above four different estimates for a bus route ($\hat{x}_{hi}$) during the i^{th} sample period in the h^{th} stratum, we used

Equation 17

$$\hat{x}_{hi} = T_{hi} \sum_{j=1}^{n} \frac{1}{w_{hij}} x_{hij},$$

where T_{hi} is the total time within the sample period, w_{hij} is the amount of time the clerk waited at the j^{th} access site on the bus route, and x_{hij} is the total number of parties or party-hours observed at the j^{th} access site. To combine these estimates for a selected sample period to get the estimated total for the stratum, we used these estimates as data for the Rao-Hartley-Cochran method that we used to select the sample periods within each stratum. Therefore, the stratum estimates ($\hat{x}_h$) for the h^{th} stratum were calculated using (Cochran 1977:266-267):

Equation 18

$$\hat{x}_h = \sum_{i=1}^{n_h} \frac{Z_{hi}}{z_{hi}} \hat{x}_{hi},$$

where Z_{hi} was the sum of the proportions of sample periods grouped with the i^{th} sample period when drawing the i^{th} of n_h samples for the h^{th} stratum and z_{hi} is the unequal probability assigned to the i^{th} sample period that was drawn with inclusion probability z_{hi} / Z_{hi}.

The estimated variance of $\hat{x}_h$ was

Equation 19

$$\widehat{var}(\hat{x}_h) = \frac{\left(\sum_{i=1}^{n_h} N_{hi}^2 - N_h\right)}{\left(N_h^2 - \sum_{i=1}^{n_h} N_{hi}^2\right)} \sum_{i=1}^{n_h} Z_{hi} \left(\frac{\hat{x}_{hi}}{z_{hi}} - \hat{x}_h\right)^2,$$

where N_h was the total number of sample periods available to be sampled in the h^{th} stratum and N_{hi} was the number of sample periods in the i^{th} group when the i^{th} sample period was drawn.

As with the access method, there were occasions when clerks were unavailable to run a bus route during an assigned sample period. We again used the cluster method (David Bowden, Colorado State University, personal communication) to obtain estimates of use for a stratum in which data had been collected in at least two sample periods. The estimator we used to calculate our four estimates of use was:

Equation 20

$$\hat{x}_h = n_h \frac{\sum_{i=1}^{f_h} \frac{Z_{hi}}{z_{hi}} \hat{x}_{hi}}{f_h}$$

with estimated variance of $\hat{x}_h$ calculated by

Equation 21

$$\widehat{var}(\hat{x}_h) = n_h^2 \frac{n_h - f_h}{n_h} \frac{s_{ht}^2}{f_h} + \frac{n_h}{f_h} \left[\frac{\left(\sum_{i=1}^{f_h} n_{hi}^2 - \tilde{n}_h \right)}{\left(\tilde{n}_h^2 - \sum_{i=1}^{f_h} n_{hi}^2 \right)} \sum_{i=1}^{f_h} \tilde{Z}_{hi} \left(\frac{\hat{x}_{hi}}{\tilde{z}_{hi}} - \hat{x}_h \right)^2 \right],$$

where $\tilde{n}_h$, $\tilde{Z}_{hi}$, and $\tilde{z}_{hi}$ were adjustments for sample size, the total proportion of the sample represented in the i^{th} group, and the adjusted sampling probability for the i^{th} sample period, respectively, as if there were no missing sample.

These estimators provided an independent estimate of the total number of parties or party-hours of use within a stratum. We combined the estimated total number of parties using the river with the independent estimate of party means from the interview responses to obtain estimates derived from the questions asked by the clerks. We calculated estimates for each interview response category ($\hat{q}_{hj}$), which is the average

number of individuals or amount of party-hours spent engaged in an activity on a per party basis within the stratum, using

Equation 22

$$\hat{q}_{hj} = \frac{\sum_{i=1}^{p_{hj}} \sum_{l=1}^{k_{hji}} q_{hjil}}{p_{hj}},$$

where q_{hjil} was the count or value for response category *j* from the l^{th} individual in the i^{th} party with k_{hji} members in the party and p_{hj} was the number of parties interviewed during the h^{th} stratum for response category *j*. The estimated variance of $\hat{q}_{hj}$ is simply:

Equation 23

$$\widehat{var}(\hat{q}_{hj}) = \frac{\frac{\sum_{i=1}^{p_{hj}} \left(\left(\sum_{l=1}^{k_{hji}} q_{hjil} \right) - \hat{q}_{hj} \right)^2}{p_{hj}}}{p_{hj} - 1}.$$

We obtained estimated totals for response category *j* for river users by combining the estimated number of parties using the river ($\hat{x}_h$) with $\hat{q}_{hj}$ through the calculation of

Equation 24

$$\hat{y}_{hj} = \hat{x}_h \hat{q}_{hj}$$

and

Equation 25

$$\widehat{var}(\hat{y}_{hj}) = \hat{x}_h^2 \widehat{var}(\hat{q}_{hj}) + \hat{q}_{hj}^2 \widehat{var}(\hat{x}_h) - \widehat{var}(\hat{x}_h) \widehat{var}(\hat{q}_{hj}).$$

(Note: $\hat{y}_{hj}$ from the bus-route method was equivalent to $\hat{y}_h$, the corresponding estimate from the access method. Here we used $\hat{y}_{hj}$ to describe the estimator applied to a single response category for a question asked by the clerks. We are demonstrating how a single estimate for the total number of parties using the river ($\hat{x}_h$) was combined with estimates

from each of the response categories ($\hat{q}_{hj}$) from the interviews. Therefore, a different number of parties, p_{hj}, was possible for each response category depending upon the number of incomplete or complete trips available within the stratum.)

Missing Interview Data.

We had several situations in the access method in which clerks counted parties leaving an access, but the clerks did not conduct any interviews during the sample period. In these situations, it was possible to obtain an estimate of the number of parties using the river, but information about how parties used the river or the composition of the party was missing for the sample period. To overcome this, we assumed that information from interviews from other sample periods within the same stratum as the sample period missing interview information represented parties that left the river without being interviewed. Therefore, in this situation, we estimated the mean values for all response categories per party, except for zip code and the contingent valuation questions, and combined these means with the number of parties leaving the river during the sample period(s) missing the interview information. These estimates were derived by

Equation 26

$$\hat{\boldsymbol{y}}_{\boldsymbol{gi}} = \boldsymbol{p}_{\boldsymbol{g}} \frac{\sum_{\boldsymbol{j=1}}^{\boldsymbol{k_h}} \sum_{\boldsymbol{l=1}}^{\boldsymbol{o_j}} \boldsymbol{q}_{\boldsymbol{hijl}}}{\boldsymbol{k_h}},$$

where $\hat{y}_{gi}$ represents the estimated value for response category *i* in the sample period, p_g was the number of parties observed leaving the access site during the sample period with missing interview information, k_h was the number of parties interviewed during the h^{th} stratum in which sample period g without interviews occurred, yet parties had left the access, o_j was the number of individuals interviewed in the j^{th} party, and q_{hijl} was the

response to the i^{th} response category for the l^{th} person interviewed in the j^{th} party during the h^{th} stratum. $\hat{y}_{gi}$ is then substituted for $\hat{y}_g$ in Equation 9 (page 25) or Equation 11 (page 27) for each question's response. The estimated variance of $\hat{y}_{gi}$ was calculated by

Equation 27

$$\widehat{var}(\hat{y}_{gi}) = p_g^2 \frac{\frac{\sum_{j=1}^{k_h}\left(\sum_{l=1}^{o_j} q_{hijl} - \hat{\bar{q}}_{hi}\right)^2}{k_h - 1}}{k_h},$$

where

Equation 28

$$\hat{\bar{q}}_{hi} = \frac{\sum_{j=1}^{k_h}\sum_{l=1}^{o_j} q_{hijl}}{k_h}.$$

We also had situations where no interviews were conducted for all the sample periods during a stratum, but clerks counted parties at the river for both the access and bus-route methods. In these situations, we first attempted to find $\hat{\bar{q}}_{hi}$ by using all interviews in the adjoining stratum. For example, if the stratum missing interviews but with counts of parties was a weekday stratum within a 4-week sampling interval, we used the weekend stratum interviews from the same 4-week sampling interval for the same group of accesses or bus routes. If the adjoining stratum did not have any interviews within a bus route or access, then we used the interviews from the adjoining 4-week sampling intervals for the same type of stratum, be it weekend or weekday. If this corresponding stratum from the adjoining 4-week sampling intervals did not contain any interviews, we used the opposite stratum from the adjoining 4-week sampling intervals for the bus route or access. Finally, for both the access and the bus-route methods, if we still did not have results, we used party mean data from the access or bus-route group ignoring strata and 4-

week sampling intervals. In other words, we used all the interviews within the group to estimate activities, harvest, and characteristics of exiting parties.

Estimation of Economic Value for Public Accesses and Areas

An evaluation of the economic benefits derived from direct use of the river was based on two different tools, a zonal travel cost method and a discrete choice method. We were able to obtain reasonable economic value estimates only for the access and area users where the access or bus-route methods were used to collect information about river users.

Travel Cost Method.

The zonal travel cost method (TCM) is one of the original types of travel cost models (Clawson and Knetsch 1966). Travel cost to the site is used as a proxy for price in TCM. The zonal travel cost model estimates the average demand function across geographic zones, to create an aggregate site demand curve. The net willingness-to-pay or consumer surplus value (CS) is then calculated as the area under the demand curve but above the travel cost. In general, and in this case, TCM is an ex-post (after the trip) measure and does not include existence values (the value that people get from the existence of the river, whether or not they visit or use it), only use values (Mitchell and Carson 1989).

Clawson and Knetsch (1966) grouped visitor origins using concentric circles in their TCM work, but less aggregation and more precision in the price variable is possible using counties or groups of counties as the zone. This also provides a convenient source of known demographics. The travel cost variable is determined by several factors, including

round trip distance, cost per mile, and the number of people in the vehicle. In addition, the opportunity cost of travel time must be considered (Parsons 2003; Shaw and Feather 1999). In zonal TCM, the multicollinearity of calculated travel cost and travel time prevent including them as separate variables. Thus, a monetary shadow price of travel time or value of travel time must be calculated and then combined with the travel cost. The U. S. Water Resources Council's (1983) most recent guidance relied upon by the U. S. Army Corps of Engineers and Bureau of Reclamation on this topic is to use between one-quarter and one-half the average, with one-third being the preferred point estimate, wage rate in the county of the respondents (wages available at U. S. Census Bureau, American FactFinder website: http://factfinder.census.gov/home/saff/main.html, accessed Sept. 8, 2010).

As river users left the Missouri River they were asked in the interview for their home zip code, and whether visiting the river was the primary purpose for their trip that day. Only those individuals for whom the primary purpose was visiting the river can travel costs be interpreted as the price paid to visit the site for their direct use. Home zip codes were used to calculate the distance (from the center of the zip code) and time traveled to the river. PC-Miler software (ALK Technologies 2007) was used to determine these distances and travel times. Distance traveled, cost per mile (American Automobile Association 2004), along with average hourly income for each zip code were used to calculate the "average" round-trip travel cost per person to the river from that county:

Equation 29

$$TC_i = 2\left(\frac{d_i\, m}{A_i} + \frac{1}{3}\, t_i y_i\right),$$

where $\boldsymbol{TC_i}$ is the travel cost per person from the i^{th} county, $\boldsymbol{d_i}$is the distance from the i^{th} county to the river, $\boldsymbol{m}$ is cost per mile of travel, $\boldsymbol{t_i}$ is the time traveled from the i^{th} county, which enters the equation as 30%, $\boldsymbol{y_i}$ is the average hourly income in the i^{th} county, and $\boldsymbol{A_i}$ is the average party size from the i^{th} county, and each of these one-way trip costs is multiplied by 2 to arrive at the full round-trip cost.

The counties of origin and their calculated travel costs also served as the basis for forming travel cost "zones", or groups of counties with similar travel costs to the river. For the purposes of this study, the estimated economic value of using the river was limited to using information from visitors from the six states within the study area (Missouri, Illinois, Iowa, Kansas, Nebraska, and South Dakota). This method does not include values from users outside this region although there were visitors from farther afield. Counties were grouped into zones programmatically for each site, starting with a zone of all counties having less than or equal to the average travel cost of the lowest cost county with observed visitors, then the second zone having counties having less than or equal to the average travel cost of the next lowest cost county with observed visitors, etc. This method ensures that all zones (except the last zone) have some observed visitors. The last zone includes all counties with travel costs higher than the highest cost county with observed visitors. Figure 3 (page 130) shows an example of these travel cost zones using Maple Island Access on the Mississippi River at West Alton, Missouri.

Finally, accesses were grouped into thirteen river segments with one of these segments being a subset of the other (Table 4, page 90). These segments were used as the "Site characteristic" explanatory variable, allowing the analysis to "borrow strength" from the

whole dataset to help estimate CS at some of the less visited accesses where fewer interviews were obtained.

Typically, the visitor reaction to increasing travel distance is non-linear. A convenient non-linear form is the semi-log where the natural log is taken of trips per capita:

Equation 30

$$log\left(\frac{T_j}{P_j}\right) = \beta_0 + \beta_{tc} + \sum_{k=1}^{m} \beta_k SiteType_k + \sum_{k=1}^{m} \beta_{TC_k} SiteType_k TC_j + \sum_{i=1}^{n} \beta_i Segment_i + \sum_{i=1}^{n} \beta_{TC_i} Segment_i TC_j,$$

where T_j is the estimated number of individual-visits (i.e., the estimated number of individual users exiting the river that are 18 years old and older within the six states) from the j^{th} zone, P_j is the population size of the j^{th} zone, $Segment_i$ is i^{th} segment of the river also accounting for the segment that is a subset of a larger segment (1 or 0), $SiteType_k$ is the k^{th} site's descriptor, and β are intercept and coefficients being estimated. The explanatory variables are listed in Table 4 and Table 5 (pages 90 and 91).

This form has two advantages: first it avoids the possibility of predicting negative trips per capita (which we do not observe in the data) and, second, the CS per trip is simply:

Equation 31

$$CS_i = -\frac{1}{\beta_{tc} + \sum_{k=1}^{m} \beta_{TC_k} SiteType_k + \sum_{i=1}^{n} \beta_{TC_i} Segment_i},$$

where CS_i is the estimate of average CS for the i^{th} segment (Donnelly et al. 1985). PROC LOGISTIC (SAS Institute, Inc 2004), in the semi-log form, was used to estimate the βs.

Equation 30 and Equation 31, which are used to estimate the CS, are highly non-linear. In order to produce both an estimate of those values and an estimate of the precision of the estimates of the values, bootstrap methods were used (Manly 1997). A random draw of 82,747 of the 82,748 observations was made with replacement, that is, an observation could potentially appear more than once in the bootstrap dataset. This new bootstrap dataset was then used to re-estimate the model. This procedure was repeated 1,000 times. Each time the resulting parameter estimates were inserted into Equation 31 to estimate CS.

Discrete Choice Method.

Another method of determining CS is simply to ask people what they would be willing to pay for a particular public good. In many studies, respondents are queried whether they would answer "yes" or "no" if asked whether they would pay a particular amount for a public good. This questioning is the heart of the contingent valuation method (CVM). This approach has problems, many of which fall under the heading of "ask a hypothetical question, get a hypothetical answer." Respondents may never have thought about the idea of paying for the public good in question and may have no idea what the price "should" be. One way of working around this issue, called discrete choice, is to offer the respondent a yes or no choice. In most cases, the discrete choice question is worded to elicit their willingness-to-pay for the existence of the public good, helping to estimate all the economic value both of use and non-use. A typical CVM discrete choice question might read, "Would you pay a tax or user fee to preserve the river?" Another typical feature of a CVM study is that the question is asked of an entire population (say, all

Missourians), perhaps via a mail or telephone survey. In this study, only river users were asked a discrete choice question.

We were not able to ask the typical CVM style question. During a pilot test of the questionnaire used in the access and bus-route methods we learned that a backlash occurred from users who wrongly assumed that the government actually intended to impose such a cost when state-employed clerks asked visitors whether they would be willing to pay a tax or fee. To avoid this backlash during the 13-month study, we presented the individual within the interviewed party whose birthday was closest to the date of interview and an adult (18 or older) a hypothetical scenario concerning an increased cost to their visit. The selected individual was asked the question: "The cost of travel frequently changes, with gasoline prices, boat fuel, hotels, restaurant meals, etc. often increasing. If the cost of this trip today had been $ _x_ higher, would you have made this trip?" Each selected individual was randomly presented with a hypothetical price increase per party (the $_x_ valve) from the set: $1, $5, $7, $10, $15, $20, $30, $40, $50, $75, $100, and $150. The last, highest two prices were asked with half as frequent as the others, which were asked with equal frequency. In this way, the question did not neatly meet the definition of a CVM survey. Rather we will call this method a discrete choice method (DCM). As was done in estimating TCM values, we used only responses from river users who resided in Illinois, Iowa, Missouri, Kansas, Nebraska, and South Dakota, and whose primary trip purpose was to visit the river.

Economically, maximum willingness-to-pay (WTP) can be defined as the amount at which a person is indifferent between having to pay the extra amount for the trip, and not taking the trip at all. In this case, the WTP will be for the whole party as represented by an interviewee. A respondent will be indifferent between taking the trip, with the extra hypothetical price, and not taking the trip when her utility for these two options is the same, that is:

Equation 32

$$\boldsymbol{v(Q^1, y - c) = v(Q^0, y)},$$

where Q is with (1) or without (0) the trip, y is income, c is willingness-to-pay, and $v()$ is the indirect utility function.

The probability that any respondent will answer "Yes" to the hypothetical additional cost can be written as:

Equation 33

$$\boldsymbol{Pr(Yes_i) = Pr[v(Q^1, y - \$B) > v(Q^0, y)]},$$

where $\$B$ is the hypothetical cost increase.

In addition, accesses along the Missouri River were coded as being "Access", "Area" or "Bus-route" sites, as described above (Table 5, page 91). Visitors' responses were modeled using a binary logit model:

Equation 34

$$\boldsymbol{Pr\left(\frac{Yes_i}{1 - Yes_i}\right) = \beta_0 + \beta_{Bid}\$B_i + \beta_1 x_{1i} + \cdots + \beta_n x_{ni}},$$

where x_{ni} are the *n* explanatory variables for the i^{th} respondent, such as age, income, etc., access characteristics, $\$B_i$ is the hypothetical price increase for the i^{th} respondent, β_n are *n* coefficients for the explanatory variables, and β_{Bid} is the coefficient on the hypothetical additional cost. The explanatory variables are shown in Table 6 (page 92).

For this model, Cameron (1988) has shown that, willingness-to-pay can be calculated as:

Equation 35

$$\boldsymbol{WTP = \frac{\beta_0}{\beta_{Bid}} + \frac{\beta_1}{\beta_{Bid}} x_1 + \cdots + \frac{\beta_n}{\beta_{Bid}} x_n = \ A_0 + A_1 x_1 + \cdots + A_n x_n,}$$

where

$$\boldsymbol{A_n = \frac{\beta_n}{\beta_{Bid}}.}$$

PROC LOGISTIC (SAS Institute, Inc. 2004) was used to estimate the maximum likelihood estimators (MLE) of the βs as outlined above, using age, gender, disability, race, and zip code level income as the other independent variables. These coefficients allow the average willingness-to-pay to be derived:

Equation 36

$$\boldsymbol{E(c) = \ \bar{x}' A,}$$

where $\bar{x}'$ are the mean values of the explanatory variables.

Equation 35 and Equation 36, which are used to estimate the WTP, are highly non-linear. In order to produce both an estimate of those values and an estimate of the precision of the estimates of the values bootstrap methods were used (Manly 1997). A random draw of 42,365 of the 42,366 observations was made with replacement, that is, an observation

could potentially appear more than once in the bootstrap dataset. This new bootstrap dataset was then used to re-estimate the model. This procedure was repeated 1,000 times. Each time the resulting parameter estimates were inserted into Equation 35 and Equation 36 to estimate WTP.

Public Use at Private Properties without Public Access: Residences and Clubs

Many people used the Missouri River or its tributaries from their primary or secondary residences and other private lands where the general public did not have access to the river. We estimated river use on these private lands without general public access by asking people responsible for river access from these properties to complete monthly diaries (Appendix H, page 145).

We identified private lands without general public access to the river by contacting landowners, lessees, managers, or by visiting with people using these private accesses. We also spoke with neighborhood associations and clubs, and received mailing lists from these contacts. Unfortunately, we were unable to make many of these contacts prior to the start of data collection on January 3, 2004, therefore, we collected river use information for a sample of private lands within the study stretch of the river and continued to acquire names and addresses of landowners or lessees of private accesses throughout the study until we had a complete listing of these properties.

Because of the delay in collecting a sufficient sample of names and addresses of club members and private access owners or lessees, our collection of data using the diary

method began on January 31, 2004 and continued through January 28, 2005. Our first set of diaries was sent out in mid-January 2004 for the 4-week sampling interval starting on January 31, 2004. As more names and addresses were added to the list, the newly-identified people were sent diaries for the 4-week sampling interval following their addition to our list. We used the same 4-week sampling intervals for collecting river use information by diaries as we used for our access, area, and bus-route efforts (Table 3, page 89).

Our initial mailing packet to a recipient of a diary consisted of a letter of introduction to the Missouri River Public Use Assessment with instructions on how to complete the diary, the appropriate diary for the recipient's first sampling interval (Appendix H, page 145), and a list of activity and species codes (Appendix I, page 147) to be used when completing the diary. If the recipient had been previously contacted and was provided information about the Missouri River Public Use Assessment, a letter of introduction was sent thanking them for volunteering and providing the instructions for the diary as a reminder (Appendix J, page 149). If we had received the recipient's name and address without providing them with prior information about our study, a different letter of introduction provided information about the Missouri River Public Use Assessment and asked for their help and cooperation in collecting information about river use from the private land (Appendix K, page 151). Both of these letters as well as the diary contained a toll-free telephone number that the recipient could use if further information or instructions for completing the diary were needed. We provided for individuals with access along the Osage River or the Gasconade River an additional list of instructions as

to how the recipient was to code activities on the Missouri River or its tributary (Appendix La and Lb, respectively, page 153).

Subsequent mailings consisted of a short letter thanking the participant for his or her cooperation (Appendix M, page 154), a new diary for the next sampling interval, and a business reply envelope for returning the just completed interval diary. Recipients along the Osage or Gasconade Rivers received another copy of the special instructions for completing the diary for those rivers. These materials were mailed about 1 week before the beginning of the next sampling interval.

In February 2005, we divided the list of names and addresses into two groups. The first group consisted of those who had received diaries during the study but had not returned any of their diaries – non-respondents. The second group consisted of those who had returned at least one diary even if they had not reported using the river at all during the study. We added to this group any names and addresses we had received since the last diary had been sent. We called this second group, respondents.

We sent non-respondents a postcard survey asking if they had used the Missouri River anytime during 2004. If they had used the river during 2004, we asked for the number of days they used the river and the number of people in their household (Appendix N, page 155). The purpose of this questionnaire was to determine the proportion of non-respondents who used the river so we would not include this entire group as being non-

users of the river. We used the information from the respondents' diaries as an estimate of the types and amount of use by non-respondents who indicated they had used the river.

We also sent a more extensive questionnaire to respondents (Appendix O, page 157). In this questionnaire, we asked for information about the type of private land they used to access the river, ownership of this land, facilities available on the land, amounts and types of use they made of the river, the number of people accessing the river through this land during 2004, distance of this land from their primary residence, their socio-demographic characteristics, number of people in the household, and an economic valuation question. This questionnaire was accompanied by a letter of transmittal (Appendix P, page 162) requesting the help of the respondent. About one month later a follow-up letter (Appendix Q, page 163) and identical questionnaire (Appendix O, page 157) were sent to those who had not responded to the initial mailing.

Additionally, we obtained a set of names and addresses for members of the St. Joseph Yacht Club and the 4F Flathead Club, in St. Joseph, Missouri. Each club constituted a stratum within a group that we called "clubs". Therefore, we had two groups representing river users who used private land not accessible by the general public – "residences" and "clubs." Both groups received the same mailing materials. However, results are reported as separate estimates for each of these groups.

We mailed diaries to 711 residences. Of these, 30 residences were later identified as no longer having land or access to the river. We received diaries from 167 (24.5%)

residences. Based upon the response from the end-of-the-year questionnaire to the non-respondents, we estimated that 729 (SE = 19) residences had the potential to be Missouri River users and our estimates of use are from this population. After the data collection was completed, we identified an additional 264 "residences" that should have been investigated. Our results do not account for these additional "residences" within our estimates.

We identified 233 members of the St. Joseph Yacht Club and the 4F Flathead Club, and mailed diaries to them. We asked club members to begin recording their Missouri River usage starting with the 4-week sampling interval beginning May 22, 2004. We continued to solicit their river usage information through January 28, 2005.

Returned diaries were coded for data entry. Data entry was completed using the double-pass method to minimize data entry errors. Data cleaning and inspection were completed using algorithms based on the logic of the diaries.

For each diary, we summed the party size and amount of time spent by activity for the 4-week sampling interval. The total number of each animal species caught/kept was also summed for each diary. If someone reported they had not used the river, they were entered as zeros for each estimated variable. These sums along with the zeros from those who responded they had not used the river were then used to determine the mean ($\hat{\bar{y}}_{ij}$) for the i^{th} variable during the j^{th} 4-week sampling interval, and their estimated variances ($\widehat{var}\left(\hat{\bar{y}}_{ij}\right)$) among the respondents.

We estimated the number of river users in each stratum (residences, St. Joseph Yacht Club, 4F Flathead Club) by combining the number of river users in the respondent group with an estimated number of river users in the non-respondent group. To estimate the number of river users within each non-respondent group ($\hat{c}$) in a stratum, we first calculated the proportion of river users in the stratum's non-respondent postcard survey who indicated that they had used the river sometime during 2004 ($\hat{p}$). The number of river users ($\hat{c}$) within each stratum was then calculated using:

Equation 37

$$\hat{c} = N\hat{p},$$

where N was the number of non-respondents within the stratum who were mailed a postcard survey. The estimated variance of $\hat{c}$ was derived using:

Equation 38

$$\widehat{var}(\hat{c}) = N^2 \left(\frac{N-n}{N}\right)\left(\frac{\hat{p}(1-\hat{p})}{n-1}\right),$$

where n was the number of completed postcards received within the stratum of the non-respondent survey. To obtain the estimated number of river users within each stratum ($\hat{C}$), we combined $\hat{c}$ with the known number of river users for the like stratum in the respondent group (M) by using:

Equation 39

$$\hat{C} = \hat{c} + M.$$

The estimated variance of $\hat{C}$ is then

Equation 40

$$\widehat{var}(\hat{C}) = \widehat{var}(\hat{c}).$$

The total for each estimated variable in each stratum was then calculated by:

Equation 41

$$\hat{t}_{ij} = \hat{\bar{y}}_{ij}\hat{C},$$

where $\hat{\bar{y}}_{ij}$ was the estimated mean for the i^{th} variable in the j^{th} 4-week sampling interval stratum and $\hat{C}$ was the total number of river users estimated by combining the number from the respondent survey with those estimated from the non-respondent survey. The estimated variance of $\hat{t}_{ij}$ was derived by

Equation 42

$$\widehat{var}(\hat{t}_{ij}) = \hat{C}^2\widehat{var}(\hat{\bar{y}}_{ij}) + \hat{\bar{y}}_{ij}^{\,2}\widehat{var}(\hat{C}) - \widehat{var}(\hat{\bar{y}}_{ij})\widehat{var}(\hat{C}).$$

To find totals over several or all of the 4-week intervals for the i^{th} variable, we used:

Equation 43

$$\hat{t}_i = \sum \hat{t}_{ij}$$

and

Equation 44

$$\widehat{var}(\hat{t}_i) = \sum \widehat{var}(\hat{t}_{ij})$$

to estimate the total and its estimated variance.

Fishing Tournaments

We used the internet, word of mouth, and referrals to identify organizers of fishing tournaments. It was easy to make contact with organizers of nationally advertised fishing tournaments. As we made contact with organizers of local fishing tournaments, they would often refer us to organizers of other local tournaments. Our survey clerks also searched local newspapers for advertisements promoting local fishing tournaments.

We provided tournament organizers with background information concerning the Missouri River Public Use Assessment, and asked for their cooperation and help. To make working with us a win-win situation for them, we instructed our clerks to not stop and question tournament participants during tournaments in which organizers provided information. Under this arrangement tournament participants could leave the access during a sample period without being intercepted by survey clerks. All tournament organizers contacted volunteered to cooperate.

About a week before each scheduled tournament we sent a record form (Appendix R, page 164) with a letter of transmittal (Appendix S, page 166) and a business reply envelope to the cooperating tournament organizers. The letter thanked the organizer for his or her cooperation, provided instructions for completing the record form, and provided a toll-free telephone number they could call if they had further questions. At the end of the study, we contacted organizers who did not return a record form to collect information about their tournaments. We also searched the internet at the end of the study to determine if we had missed any tournaments during 2004.

Our analysis of these results consisted of a summary of the tournaments as reported by the organizers. We assumed these results represented a census of all tournaments of which we were aware. Clerks, however, did collect information from tournaments that we did not know about beforehand. These tournaments usually consisted of a few participants who got together for a day of competitive fishing. These tournaments were

not organized by a central person responsible for the rules, advertising, scheduling, and results. Results from these smaller, unorganized tournaments were reported as a part of the public accesses and areas information.

Excursion Boats

Commercial excursion boats also plied certain portions of the Missouri River during 2004. Excursion tours were typically sightseeing adventures that lasted from a couple of hours to several days. We located owners or managers of these operations by searching the internet or from discussions with experts. We contacted owners or managers and asked them to provide a count of the number of passengers (excluding crew and employees) they served during each month in 2004.

Results

Public Accesses and Areas

Estimated Public Use from St. Louis to Gavins Point Dam

From our access and bus route methods for public accesses and areas, we estimated 2,042,980 (SE = 37,970) individual-visits (i.e., number of exiting public users of the river) were made to the river and 6,520,330 (SE = 374,300) individual-hours were spent by these visitors on or along the river during the study period (Table 7, page 93). On average an individual spent an estimated 3.2 (SE = 0.19) hours per visit. These visitors came to the river in an estimated 1,139,640 (SE = 20,560) parties (party-visits) with the average party size consisting of 1.79 (SE = 0.05) individuals per exiting party. These estimates are based on the 111,669 interviews clerks obtained from people leaving the Missouri River, its tributaries, and the seven conservation areas or National Wildlife Refuges that we assessed for public use from January 3, 2004 through January 28, 2005. The individual interviews came from the 88,867 parties clerks observed leaving the major accesses or areas and the additional 6,757 parties or their parked vehicles clerks observed at accesses along bus routes.

As expected, the number of visits to the river was greater during the spring, summer, and fall and least during the winter. Over 150,000 individual-visits per 4-week sampling interval were made during sampling intervals 4 through 10 (March 27 – October 8, 2004). Individual-visits varied with an estimated low of 51,980 (SE = 6,720) during January 1 – 28, 2005 (sampling interval 14) and a high of 237,780 (SE = 12,570) visits during June 19 – July 16, 2004 (sampling interval 7; Figure 4, page 131). Usage also varied in terms

of the weekend and weekday strata (Figure 5, page 132). In a breakdown of river use by weekdays and weekends, we noted the number of weekend visits peaked during August 14 – September 10, 2004 (sampling interval 9) and the number of weekday visits peaked during June 19 – July 16, 2004 (sampling interval 7). The number of individual-visits to the river was usually greater on the weekdays from January 3 through August 13, 2004 (sampling intervals 1 – 8), but weekend visits were more numerous than weekday visits during the fall and early winter (August 14 – December 3, 2004; sampling intervals 9 – 12).

River users reported being involved in 71 different activities (Table 7, page 93). Sightseeing was the most popular activity accounting for 29.23% of the individual-visits with an estimated 597,070 (SE = 16,810) individual-visits during this study (Table 7, page 93). The next most popular activity was fishing with 486,070 (SE = 17,650) individual-visits with all angling activities combined (Table 7, page 93). Fishing accounted for 23.79% of the activity where individuals engaged in at least one angling activity. Boating was the third most popular activity with 243,130 (SE = 13,390; 11.90%) individual-visits. Each of the remaining activities accounted for less than 10% of the individual-visits. Non-consumptive activities, which included sightseeing and boating, accounted for 72.25% of the estimated individual-visits. Hunting accounted for about 4.98% of the individual-visits.

Participation in activities, as measured in individual-visits, varied by season and 4-week sampling intervals. The most frequent activities for each of the 14, 4-week sampling

intervals were displayed in Figure 6 (page 133). Sightseeing was always a frequent use during the study, while fishing became a more frequent use during March through mid-November. Boating was a more frequent activity during late April through early October (schedule intervals 5 – 10).

However, users spent most of their time (as opposed to individual visits) camping, fishing, and boating. Camping accounted for an estimated 2,176,450 (SE = 285,350) hours of use or 33.38% of the estimated total. On average, campers spent an estimated 32.1 (SE = 23.25) hours in this activity. Fishing accounted for 21.96% of the hours, followed by boating with 13.09% (Table 7, page 93). All non-consumptive activities combined accounted for an estimated total of 4,468,580 (SE = 308,520) hours of activity, which amounted to 68.53% of the total estimated hours spent on or along the river. Hunting accounted for only 8.92% of the time.

The estimated 255,870 (SE = 8,770) fishing parties consisted of 486,070 (SE = 17,650) anglers who caught an estimated 611,070 (SE = 34,130) fish and kept an estimated 301,000 (SE = 15,160) fish. Successful fishing parties reported catching and/or keeping 49 species of fish with an additional category for those species not specified (Table 8, page 96). Catfish species were the most caught and kept fish species with an estimated catch of 309,340 (SE = 28,780) fish. Of those catfish caught, 168,770 (SE = 12,390) fish were kept and this resulted in an estimated harvest rate of 21.61 (SE = 0.98) catfish harvested per 100 hours of fishing.

Hunters and trappers reported taking turtles and clams, ten mammal species and 26 bird species (Table 9, page 99). Overall, waterfowl hunters targeting mallards reported the greatest party success and harvested the greatest number of wildlife. In all, hunters harvested 33,510 (SE = 6,570) waterfowl. Mourning dove hunters reported the next greatest wildlife harvest (i.e., retrieved doves), which was different from the number that they reported shot (i.e., hit but not retrieved). White-tailed deer hunters reported the highest success and harvest for any of the mammalian species harvested (Table 9, page 99). Even though we estimated that 10 (SE = 9) parties pursued frogs, none were successful.

Overall, river users at public accesses and areas can be characterized as white, middle-aged males without a disability (Table 10, page 101). The plurality of users was between the ages of 45-64 years old (30.57%), white (92.97%), male (72.19%), and had no physical or mental impairments (91.54%). Over 12.5% of those coming to the river were 17 years or younger, while just over 11.8% were 65 years or older, leaving over 75% of the visitors within the age category of 18 to 64 years of age. Blacks or African-Americans accounted for 4.0% of the visits and the Hispanic or Latino ethnic group accounted for an additional 1.3%. People who considered themselves to be Asians, American Indians, and other races or ethnic groups accounted for less than 1.2% of the visits. In terms of physical or mental impairments, those indicating they had a mobility impairment (2.7%), another (not specified) impairment (2.2%), or a hearing impairment (2.0%) accounted for greatest number of river visitors with impairments. Those visitors self-reporting a mental or visual impairment accounted for less than 1.0% of the users

visiting the river. Note that all characterizations were self-reported and that for each of these demographic classes there is a category of "unknown" in Table 10 (page 101). These visitors either did not report their category or the survey clerk may have failed to record the visitor's response.

Nearly 50% of the individual-visitors possessed a hunting, fishing, or trapping permit from any state along the study stretch of the river (Table 10, page 101). About 48% did not possess a permit, and almost 3% did not report having a permit or their response was not coded. Many in the group not reporting having a permit were of an age not required to possess a permit to hunt or fish.

Users of public accesses and areas came from around the world. Survey clerks recorded visitors from as far away as Australia (5 interviews recorded) and New Zealand (1 interview recorded). Other river visitors came from Canada (21 interviews), Germany (9), United Kingdom (9), Ireland (3), Mexico (2), Singapore (2), Sweden (2), Switzerland (2), Israel (1), Macedonia (1), Netherlands (1), and Spain (1). However, the average distance that an individual-visitor was from home was estimated to be 81.5 (SE = 5.2) km (50.6 [SE = 3.3] miles). The median distance from home was 16.1 km (10 miles), and 75% of those interviewed indicated that they were within 48.2 km (30 miles) and 25% were within 8.0 km (5 miles) of their residence. The 95^{th} percentile contained interviewees who were within 241.4 km (150 miles) of their residence, while the 5^{th} percentile contained interviewees within km 1.6 km (1 mile) of their homes.

Estimates of Economic Benefit of the River to Users

Travel Cost Method.

We obtained parameter estimates for our travel cost method (TCM) model for estimating consumer surplus (CS) for those river users who were at least 18 years old (Table 11, page 102). The estimated total CS value using the TCM model was $20,108,708 (95% bootstrap confidence interval [95% CI] = [$16,515,216, $24,539,290]) for the estimated 1,572,764 visitors who were at least 18 years old and residents of the six states that we used in this analysis. This was an estimated average CS of $12.79 (95% CI = [$10.50, $15.60]) per visitor.

Discrete Choice Method.

We also obtained parameter estimates from the logistic regression using the DCM (Table 12, page 103). Note that "Segment" and "Access, Area, Bus-Routes" were categorical variables and that Segment 8 and "Bus-Routes" were the "defaults" and as such did not have parameter estimates. The total willingness-to-pay (WTP) was, $38,744,799 (95% CI = [$33,274,885, $44,189,587]), and was calculated as simply the product of the average WTP of each party, which was $46.47 (95% CI = [$40.60, $52.10]), and the total number of parties, which was an estimated 833,817 parties.

Estimates of Public Use by Selected Segments of the Missouri River

We summarized our estimates of Missouri River public use at public accesses and areas to coincide with the river segments used by Fleener (1989) to allow easier comparison between Missouri River use in 2004-2005 and 1983-1987 (results are presented in Appendix T, page 167). Our access and bus-route method samples for Fleener's

segments covered all of the accesses included in Fleener's study plus many more lesser-used accesses that Fleener did not consider. We also summarized results for the Nebraska reach of the Missouri River and provided estimates for seven separate segments of this reach (results are presented in Appendix T, page 167).

Ancillary Information about Public Use at Selected Access Sites: Indian Cave State Park and Haworth Park

We obtained additional information beyond our estimates for public use using our access and bus-route methods. We were able to obtain additional information for two parks, Nebraska Game and Parks Commission's Indian Cave State Park and Bellevue's Haworth Park. We were provided visitation information about people entering Indian Cave State Park (Table 13, page 104), and campground and shelter usage information at Haworth Park (Table 14, page 105). Our estimates of public use at Indian Cave State Park's access obtained using our access method was a subset of those included in this visitation information from the park. In contrast, the additional information from Haworth Park had little overlap with our estimates of use at the marina and boat ramps at this park. The Haworth Park manager provided an estimate of 11,786 shelter users (7,286 paid and 4,500 unpaid) for 2004.

Public Use at Private Properties without Public Access

Residences

"Residences" is a misnomer as a label for this group of people. Indeed, only 1.6% (SE = 0.01%) of people in this group who responded to the end-of-the-year questionnaire (Appendix K, page 151) reported the land they used to access the river was their primary

residence and an additional 19.1% (SE = 0.06%) reported the land they used was their summer residence. Most (49. 7%; SE = 0.1%) used the land as their weekend/vacation spot. Nearly 66.4% (SE =0.1%) reported having a house, cabin, or house trailer on the land, and 26.7% (SE = 0.1%) reported that the land had an area where they could set up a recreational vehicle, camping trailer or tent (Table 15, page 106). About 88.2% (SE = 0.05%) of the respondents reported that electricity was available on the land, 84.3% (SE = 0.07%) reported sleeping facilities were available, and 83.0% (SE = 0.07%) reported having plumbing. Almost 60.4% (SE = 0.12%) reported having a boat dock (Table 15, page 106).

We estimated our identified residence users made 204,520 (SE = 9,610) individual-days (i.e., an individual spending at least some portion of a 24-hour day engaged in a river activity) within 73,040 (SE = 3,350) party-days (i.e., one or more people in a party spending at least some portion of the day engaged in a river activity) to the river (Table 16, page 107). They also used the river an estimated 2,573,560 (SE = 186,290) individual-hours. In total, respondents reported participating in 53 different activities (Table 16, page 107). We estimated 108,410 (SE = 8,420) individual-days were taken for cottage use and camping, and these activities amounted to an estimated 1,724,860 (SE = 154,520) individual-hours of use (Table 16, page 107). Therefore, less than one-third of the time was spent in other activities (Table 16, page 107). "Undefined use" included activities the respondents failed to record on the diary along with activities we suspected were not on our activity coding form.

Anglers at these residences reported catching and/or keeping 34 fish species or fish species groups including a group for unidentified fish (Table 17, page 110). An estimated 28,170 (SE = 6,290) fish were caught and an estimated 20,430 (SE = 8,360) fish were harvested. We estimated a harvest rate of 22.28 (SE = 2.92) fish harvested per 100 hours of fishing. Estimates of the number of successful party-days, number of fish caught, number kept, and harvest rate by species were reported in Table 17 (page 110).

Hunters at these residences were also successful. We estimated 4,740 (SE = 930) individual-days were spent in hunting and 22,610 (SE = 5,290) hours were spent hunting by this user group. Fourteen species of wildlife were harvested (Table 18, page 112) and an estimated 2,130 (SE = 420) animals were harvested (Table 18, page 112). The harvest rate was 9.43 (SE = 2.21) animals harvested per 100 hunting hours. We estimated a total waterfowl harvest of 1,300 (SE = 350) birds for a harvest rate of 17.49 (SE = 5.38) birds per 100 hours of waterfowl hunting.

Respondents to the end-of-the-year questionnaire indicated they lived an average of 51.1 (SE = 15.2) miles from the Missouri River land they used. Their households consisted of an average of 2.6 (SE = 0.1) people with 2.1 (SE = 0.1) adults and 0.6 (SE = 0.1) children. Households consisted of an average of 1.1 (SE = 0.1) males and 1.0 (SE = 0.1) females and a nearly even average of 0.3 (SE = 0.1) male and female children. Most were white with few disabilities (Table 19, page 113). The majority also owned a boat (Table 19, page 113).

Clubs

Members of clubs and their guests for the St. Joseph Yacht Club and the 4F Flathead Club spent an estimated 12,830 (SE = 2,230) individual-days (Table 20, page 114) in 3,300 (SE = 510) party-days on the Missouri River during this period. Club members reported engaging in over 30 different activities for an estimated 124,830 (SE = 24,120) hours of river use (Table 20, page 114). An estimated 1,230 (SE = 400) anglers (Table 20, page 114) caught an estimated 2,200 (SE = 490) fish and kept 1,150 fish (SE = 330) (Table 21, page 116). Club members reported engaging in only one hunting activity – mourning dove hunting. The estimated 40 (SE = 40) mourning dove hunters were unsuccessful.

Club members who returned an end-of-year questionnaire (Appendix O, page 157) indicated that 88. 5% (SE = 8.0%) believed that they were members of a club (Table 22, page 117). They also provided information about facilities available at their clubs (Table 22, page 117). Most club members owned and used a motor boat (70.2%; SE = 10.6%), while 19.3% (SE = 0.01%) did not own and use a boat and 10.6% (SE = 0.01%) just owned a boat (Table 23, page 118). One hundred percent of the club members reported they were white (Table 23, page 118). Club members indicated 16.6% (SE = 10.4%) of them had a visual impairment, 14.5% (SE = 9.2%) had a mobility impairment, and 13.0% (SE = 9.2%) had a hearing impairment (Table 23, page 118). They had an estimated average of 2.3 (SE = 0.2) persons in their household of which 2.0 (SE = 0.1) were adults and 0.3 (SE = 0.2) were children. Of the estimated 2.3 persons per household, 1.1 (SE =

0.1) were adult males, 0.9 (SE = 0.1) were adult females, 0.2 (SE = 0.1) were male children, and 0.1 (SE = 0.1) were female children.

Fishing Tournaments

We documented 26 fishing tournaments on the Missouri River from St. Louis to Gavins Point Dam, including a single tournament held on the Mississippi and Missouri Rivers. Of these, we received information from 18 tournaments. For the other eight tournaments, organizers told us tournament results were lost and were not retrievable. Of the 18 reports we received, 17 tournaments were solely on the Missouri River, and, fortunately, the organizer for the Mississippi/Missouri River Tournament recorded the results separately for each river. The Mississippi/Missouri River Tournament was "headquartered" at the Maple Island Access below Lock and Dam 26 on the Mississippi River, which is upstream from the mouth of the Missouri River. Seventeen tournaments were catfish tournaments and one was a bass tournament. All tournaments were held between May 1 and September 26, 2004, including the eight for which we could not get a complete set of results.

In total, for the reporting tournaments, 372 boats with 783 fishermen participated in these tournaments (Table 24, page 119). They fished 7,993 angler-hours for an average of about 10.2 hours per angler, which was the average amount of time for a tournament. In total for 17 tournaments (one tournament summary reported number of pounds of fish caught) 343 channel catfish (10 kept), 238 flathead catfish (18 kept), 120 blue catfish (7 kept), 146 smallmouth and largemouth bass (none kept), 255 carp (5 kept), and 3 drum

(none kept) were caught for a total of 1,105 fish caught and 40 kept. In the tournament for which they reported the pounds of fish caught, they caught 258 pounds of catfish, which included 199 pounds of flathead catfish and 59 pounds of blue catfish.

Organizers also estimated the size of the crowd of tournament on-lookers attending the end of the tournament ceremonies at 14 tournaments. This estimate did not include participants. In total, organizers reported 604 on-lookers attended the ceremonies at the end of these tournaments.

Even though we did not receive Missouri River use information from 8 tournaments held in 2004, we did learn where and when these tournaments were held (Table 25, page 123). Organizers told us most of these tournaments were 3 - 8 hours in length.

Excursion Boats

Three excursion boats took members of the public out on the Missouri River during 2004. The operating season for the excursion boats began in April and ended in October. The "River Star" at Omaha, Nebraska was the first boat to operate in April and it ended operation in October. The "Spirit of Brownville" at Brownville, Nebraska began its season in May and ended operations in October. The River Barge Excursion had a two-barge resort-type cruise boat with sleeping accommodations. This barge complex made two trips on the Missouri River in 2004. The first trip was done in mid-May from St. Louis and ended at St. Charles, Missouri. The other trip was done in August from Louisville, Kentucky to South Sioux City, Nebraska.

The “River Star” tours were one hour in length for the general public. They also offered a minimum two-hour cruise for private parties. During their season in 2004, they accommodated 40,797 passengers (Table 26, page 124). All of these cruises were made on the river in the vicinity of Omaha, Nebraska.

The “Spirit of Brownville” tours were made in the vicinity of Brownville, Nebraska. They accommodated 5,563 passengers during their 2004 season (Table 27, page 125).

The River Barge Excursion reported carrying a total of 943 passengers during their 2 major cruises on the Missouri River during 2004. The first cruise from St. Louis to St. Charles had 88 passengers, who enjoyed the Lewis and Clark events at Riverfront Park in St. Charles during May. After an evening on the barge, these passengers departed and 86 passengers boarded for a voyage from St. Charles to Memphis, Tennessee. The River Barge Excursion returned to the Missouri River in August, and in four separate cruise segments beginning at St. Charles, Missouri with an exchange of passengers at the start of each segment, they accommodated 769 passengers, which included 58 passengers who departed at St. Charles after traveling from Louisville, Kentucky. At Sioux City, Iowa, the departing passengers were able to enjoy a Lewis and Clark commemoration event that was in progress at Chris Larsen Park.

Discussion

River Use

When we added all the estimated individual-visits from our access and bus route sampling, and estimated individual-days from the private property diary information together with the number of participants of fishing tournaments, excursion cruise guests, visitations at Indian Cave State Park, and campground and shelter visitors at Haworth Park, we estimated a total of 2,494,740 (SE = 39,230) visits were made to the Missouri River and its tributaries during our study. (If the estimated number of individual-visits to the 2004 Lewis and Clark commemoration events [Sheriff et al. 2008] are added to this value, then the total is 2,701,832 (SE = 39,450) visits.) This estimate likely included some overlap in number of individual-visits due to some double counting at Indian Cave State Park and Haworth Park. At a minimum, we estimated 1,218,840 (SE = 20,840) parties visited the Missouri River and its tributaries, which excludes the above mentioned Lewis and Clark events. We considered this to be a minimum number of parties because we did not have data on the number of parties using Indian Cave State Park, or shelters at Haworth Park, or for excursion cruise participants. When we combined estimates of the amount of time spent on the river from our access and bus route samples, and from information from residences, clubs, and fishing tournaments, we estimated visitors used the Missouri River and its tributaries for 9,226,713 (SE = 418,791) hours. We determined the estimates of economic value of the river for adults using public accesses and areas was $20.1 (95% CI = [$16.5, $24.5]) million using the travel cost method (TCM) and $38.7 (95% CI = [$33.2, $44.2]) million from the discrete choice method (DCM).

Visitors to the Missouri River primarily engaged in non-consumptive activities on and along the river during our study. We estimated 1,734,310 (SE = 32,940) combined individual-visits (for public accesses and areas) and individual-days (for residences and clubs), and over 6,973,140 (SE = 35,470) hours were spent in a non-consumptive activities. We considered the hours spent in non-consumptive activities to be minimum estimates because we were unable to account for the hours of use at Haworth Park for campground and shelter use, the hours spent on excursion cruises, and the hours spent by the audiences at fishing tournaments.

Fishing was the most popular consumptive activity of river users. An estimated 513,150 (SE = 17,810) combined angler-visits (for public accesses and areas) and angler-days (for residences and clubs) were taken by river users and they spent an estimated 1,538,010 (SE = 56,820) hours fishing. In contrast, hunting use on or along the river was about 40% of that for fishing use. Hunters spent an estimated 604,480 (SE = 127,640) hours hunting during 106,620 (SE = 11,360) combined hunting-visits (for public accesses and areas) or hunting-days (for residences and clubs).

The number of activities and the places where the public engages in these activities were quite diverse; therefore, we separated these activities into smaller groups for those users of public accesses and areas, residences, and clubs. We defined three subsets of river users: 1) activities primarily conducted on the banks or shoreline of the river; 2) activities primarily conducted in the water channel of the river; and 3) a subset of water channel

activities called primary contact, which included waterskiing, floating (in inner tubes or air mattresses), and swimming.

By far the largest subset of activities in which users engaged was in bank or shoreline activities. We estimated approximately 56% of all individual-visits (for public accesses and areas) and individual-days (for residences and clubs), and 63% of the time engaged in Missouri River use was done from the bank or shoreline. We estimated 1,398,420 (SE = 30,600) individual-visits (for public accesses and areas) and individual-days (for residences and clubs) were involved in these shoreline activities, and visitors spent an estimated 5,774,730 (SE = 384,920) hours engaged in these activities. Our list of bank and shoreline activities included all hunting activities, except waterfowl hunting, and frogging; camping; picnicking; nature study; loafing and sightseeing; cottage use; off-road vehicle use; gathering products, which included gathering mushrooms, bottles and cans; target shooting; rappelling; caving; sunbathing; partying; hiking; exercising; preparing for hunting season; activities associated with following the Lewis and Clark trail; photography; playground/telephone/restroom usage; sporting activities; dog training; observing paddlefish snagging, an activity done mostly just below Gavins Point Dam; geocaching; educational tours; a Oregon and California Trail Tour; horseback riding; shooting fireworks; ice skating; arts and crafts; releasing wildlife; flying model airplanes; and motorcycling.

Estimates for the combined individual-visits and individual-days involved in bank or shoreline activities probably were a minimum estimate, because we used different

methods to collect public use information at public accesses and areas, and at private properties without general public access (access/bus-route methodology versus residences/clubs diary records). We made the assumption that these two measures were accounting for the same amount of use when we combined individual-visit estimates from public accesses and areas with estimates of individual-days from residences and clubs. However, people using residences and clubs could have made multiple visits to the river during a single day (considered multiple visits for the access and bus-route methods), but these multiple visits would have been considered a single individual-day in the diary method. The estimated number of hours of use, however, is equivalent among all groups no matter which method we used to collect the information.

Activities we categorized as water channel activities included fishing, bait collecting, waterfowl hunting, frogging, boating, canoeing and kayaking, jet skiing, tuning (or trying out) boat and/or motor, part of a Missouri River Relief activity, and our three primary contact activities (waterskiing, floating, and swimming). We estimated 866,000 (SE = 24,490) combined individual-visits (for public accesses and areas) and individual-days (for residences and clubs) were made in water channel activities and these visits accounted for 3,044,820 (SE = 100,500) hours of river use.

Primary contact activities were of special interest because they are associated with establishing water quality regulations on water bodies. Nearly 2% of the total Missouri River individual-visits (for public accesses and areas) and individual-days (for residences and clubs), and about 1% of the user hours were spent in primary contact activities. Our

estimates for primary contact activities were 43,050 (SE = 4,820) combined individual-visits (for public accesses and areas) and individual-days (for residences and clubs) with users spending 88,100 (SE = 8,430) hours engaged in these three activities (waterskiing, floating and swimming).

Our estimates of public use should be considered minimum values. This is especially true for estimates of use associated with public accesses and areas because sometimes we could not sample an access or bus route due to a shortage of clerks. An example of this was our inability to find clerks for bus routes on the west side of the Missouri River from just north of Decatur, Nebraska to just south of Dakota City, Nebraska. In addition, we faced occasions when we did not have enough clerks to sample an access during every sampling interval. Therefore, for these accesses we do not have estimates for all sampling intervals. We also may have not found all the fishing tournaments. We had hoped the sampling schedule would have intercepted those tournaments that we missed but we did not, in fact, intercept any of the eight known tournaments that we learned about after they occurred. We also missed gathering information from over 200 parcels of land that we should have included as part of our private land diary effort. Conversely, we may have overestimated river use at private properties without public access because we assumed people who did not return a diary were similar to those who submitted diaries. We argued, however, this non-response bias may have been offset by river use at the missed parcels.

When conducting public use assessments, one wishes for a "normal weather" year or one wishes for a study that can be performed for decades so that average use of the area, river, or access can be determined. For this study, we were able to examine Missouri River use over a 13-month period, yet we caution users of these estimates to interpret them in light of the location, river conditions (Figure 2, page 128), and weather that occurred during 2004. Due to the length of Missouri River that we studied, river conditions and weather varied. In comparing river flow (in cubic feet per second of discharge) for Sioux City, Nebraska City, Kansas City, and Hermann, Figure 7 (page 134) shows that the discharges during the sampling intervals used in our study varied by location. For example, our mean discharge by sampling interval at Sioux City was below the previous 10-year median discharge, and even below the lowest recorded mean daily discharges recorded during this period from 1994 through 2003. Contrast this with the mean daily discharges recorded for Hermann, which was nearer the previous 10-year median mean daily discharge. In fact, during our study the maximum mean daily discharge at least twice topped the record set during 1994 through 2003.

The mean daily discharges shown in Figure 7 (page 134) do not tell the entire story at the local level. For example, it started to rain on the evening of May 23, 2004 in Washington, Missouri and it continued to rain for nearly a week after. This rain and subsequent rains throughout the Missouri River Basin for the next month raised the river to flood stage. In fact, the Edward D. Jones Confluence State Park at the confluence of the Missouri and Mississippi Rivers was flooded starting in late May, just after its official opening. Authorities closed the area and did not reopen it until after mid-July.

In terms of weather, the mean temperature and average amount of precipitation were quite variable for the entire states of Missouri and Nebraska during the months of our study (Table 28, page 126). Generally, the winter months of our study ranked on the warmer side when compared to the records for the last 111 years, while the summer months of our study ranked among the very coolest experienced during this same time frame. As for precipitation, both states showed a great deal of variability throughout the year as well as within seasons. As previously pointed out local weather situations, like that during late May and early June in the vicinity of Washington, Missouri had an impact on local use along the Missouri River.

The summer of 2004 was also a unique year along the 811-mile stretch of the Missouri River that we studied, because of the numerous Lewis and Clark commemoration events and the massive advertizing effort to market the bicentennial of the Corps of Discovery's voyage up the Missouri River. We expected many people would be attracted to the Missouri River because of this commemoration. In fact, Sheriff et al. (2008) estimated 207,088 (SE = 4,160) visitor exits were made from the 32 Lewis and Clark commemoration events they studied. One could argue the attention given to the Lewis and Clark bicentennial commemoration may have increased the "normal" usage of the river during 2004, because people attending commemoration events had the opportunity to learn about the river and activities that they could engage in on and along the river. To truly gauge the impact of the bicentennial commemoration on Missouri River use, we would have had to estimate river use for several years before and after the 3-year observance (2004-2006) of the commemoration.

One also wishes that the public users would report their activities, amount of use, and other information accurately without bias. However, users likely did not correctly recall the information we requested. Therefore, our estimates probably contained some degree of recall bias. We considered our estimates to be what all public users would have reported if we would have been fortunate to receive information from all users of the studied portion of the Missouri River.

We further caution users of our estimates when they are making comparisons to those from other studies, such as Fleener's (1989) efforts. The different locations sampled and different sampling methods used can produce results that are not comparable. Even though we sampled all the same accesses Fleener (1989) sampled in the 1980s, there were many more public accesses and areas from which people could access the river in 2004 than during Fleener's study. Another difference between Fleener's work and ours was the opportunity to sample use at private lands where the general public did not have access to the river. Another complication in making comparisons between our study and Fleener's work was that Fleener reported "total visits," which would seem to be equivalent to our "individual-visits" from the public accesses and areas portion of our assessment. We think, however, Fleener's total number of visits was the sum of visits by activities. For instance, if a person swam and fished in one trip to the Missouri River during Fleener's study, we think that person's one trip would have been counted twice in the total number of visits. (That one trip would have counted once for swimming and

once for fishing.) In our study, that one trip to the river was considered just one trip with two activities and would have been counted as one individual-visit in our estimated total. Therefore, we do not know if our estimated total of individual-visits within Fleener's river segments was an underestimate of his total visit variable, or if our estimates of individual-visits by a specific activity are an overestimate. Caution is needed in making such comparisons.

Economic Benefits

Our study allowed estimates of the economic benefit people obtained when they value a "product", that is the use of the Missouri River, more than what they paid for it. The challenge we faced in estimating this "consumer surplus" (CS) generated by river recreation was that there was no "price" or market where a person could purchase a day at the Missouri River. No ticket was required. Rather, two indirect methods, zonal travel cost and discrete choice, were used to estimate the economic benefit of the river to users.

In all, recreation at public accesses and areas on and along the Missouri River was a highly valued experience for users, with a benefit to users somewhere in the range of $20 million (zonal TCM) to $39 million (DCM) during the period from January 3, 2004 through January 28, 2005. If the total CS was divided by the estimated number of individual-visits or party-visits, the economic benefit ranged from about $15 per individual-visit using the zonal TCM to $43 per party-visit using DCM.

The total CS estimates from the two methods should probably be viewed as lower boundaries of the actual total value for several reasons. First, users from outside the

states bordering the river were not included in the analyses, and they surely gained some value from the river. In addition, users whose trip primary purpose was other than a visit to the river (for example, someone who just stopped by a river access on the way to see relatives in town) were excluded from our estimates because there was no simple way to determine how much of the value of their total trip should be "credited" to the river. Yet these visitors too surely gained value from the river.

An obvious question raised by the two very different estimates of economic value from the two methods is, "Why are they so different?" If the DCM had followed the strictures of an ideal survey, that question might be answered with Mitchell and Carson's (1989) observation that TCM accounts for only "use values," that is the value that a visitor gains during their visits, while DCM also includes various "existence" values, such as the value that someone may gain just by knowing the river is "still there", available for their or other's recreation, and the "bequest" value they may feel, knowing that the river will be left in good condition for future generations. In the case of our study, this explanation may not suffice. Recall that the discrete choice question itself did not ask a visitor whether they would be willing-to-pay "for the river" but for an added expense of "gas, etc." for their trip to the river. In addition the clerks only interviewed actual users of the river, not the entire population (and non-users, by definition, gain only existence values).

Looking more closely at just who the two methods "account" for, and who they are "asking," may help to explain the difference between the $20 million total from TCM and $39 million total from the DCM. Recall, in the TCM method, Equation 30, the demand

curve is estimated based on the proportion of people from a county who visited the river. In this method, in some sense, we are accounting for all the non-users from that county who did not visit the river. For example, if our results say there were 20,000 individual-visits from County J and County J had a population of 100,000, the number that goes into the demand curve estimation is 0.2 visits per capita. And all those "non-users" help to bring down the average CS from the TCM. In contrast, as earlier noted, the DCM employed in this survey posed the question only of actual users, visitors to the river. Non-users, in this instance, were not "accounted" for. It is not unreasonable to suppose that users are more willing-to-pay than non-users (after all they just made the trip!) and this may help to explain the difference in the two estimates.

Conclusion

This study was performed to allow for more informed decisions about management and use of the Missouri River. Even before this final report was completed, information from this work was used in discussions concerning water quality regulations, the potential for recreation infrastructure development along the riverfront, and management of recently acquired public properties along the river. As we planned the study, conducted the field work, and analyzed the results we assumed the estimates and information contained within this work would inform not only the state and Federal agency-based management decisions of which we were aware, but also management decisions of which we were not aware in discussions at regional, basin, and national levels.

Users of this information from our study may desire more local, seasonal, and specific information to inform their management decisions than what is discussed within this final report. To aid users in obtaining their desired information, we have developed a searchable database of estimates from the public accesses and areas portion of our study that allows one to answer questions, such as how much public use was observed along a stretch of the river and how many river users engaged in a particular activity on the river. This database can be queried to provide answers to more specific questions about a location, activity, and fish and wildlife harvest. A guide to using the database accompanies the program, and copies of the database and user's guide are available upon request.

The Missouri River and its tributaries have been important to people since before Lewis and Clark took their journey up the river 200 years ago. Our study illustrated that even in modern times, people still use and value the Missouri River. Nearly 2.5 million visits were made to the river and visitors spent over 9 million hours on and along the lower Missouri River during the 13-month study. Expressed in different terms, we estimate 6,400 combined individual-visits (for public accesses and areas) and individual-days (for residences and clubs) were made per day to the study stretch of the river and over 1,911 combined individual-visits (for public accesses and areas) and individual-days (for residences and clubs) were made per river km (or 3,076 combined individual-visits and individual-days per river mile) during our study. Said another way, we observed about 8 individual-visits (for public accesses and areas) and individual-days (for residences and clubs) to each mile of the river during each day of the study. In another measure of use and value, a lower Missouri River visitor valued the river to the level of $15 per individual-visit (using the travel cost method, TCM, estimator) to $43 per party-visit (using discrete choice method, DCM), which is about $24 per individual-visit, based on the average party size of 1.79.

In addition, the lower Missouri River served as a playground, an adventure and vacation destination and as a relaxing environment for users as they engaged in 71 different activities during the study. As our study and other studies of public use of this stretch of the Missouri River have shown, this icon of American history continues to be used and valued by the public for their recreational enjoyment.

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Glossary

Consumer Surplus – The area under the demand curve and above the price for a good; it is the amount that consumers benefit by being able to purchase a product for a price that is less than the most that they would be willing to pay.

Individual-Days – The number of days a person used the river from private land where the general public did not have access to the river. Individual-days cover the 24-hour period of river use by these individuals. If a person visited this land and did different river activities several times during a day, the person would be counted as having done one individual-day of river use in the estimate. For example, if a person went once in the morning to their land to fish and returned in the late afternoon with their family of three other family members to camp and picnic along the river on this land, our estimates for residences would be calculated using four individual-days. This is in contrast to individual-visits for estimating use of public accesses and areas (see Individual-Visits).

Individual-Visits – The number of visits (trips) a person made to and used the river from public accesses or areas. Individual-visits account for the use by exiting visitors of these accesses or areas from ½-hour prior to sunrise to ½-hour after sunset. If a person came to and left an access several times, each time they left during the sample period each exit would be counted as an individual-visit. For example, if a person came to an access in the morning and left before noon and later in the day they returned to picnic at the access with three other family members before they left at sunset, their river use would total five individual-visits for the sampling period (i.e., once for the person in the morning and four for the family's evening visit).

Party-Days – The number of days a party of users were at the river on private land where the general public did not have access to the river. The party could have been at the river any part of a 24-hour period.

Party-Hours – The number of hours a party of one or more visitors in a group spent at the river. Party-hours can only be estimated from data collected using the bus-route method.

Parties-Visits – The number of visits (trips) a party made to and used the river from public accesses or areas. A party consists of one or more persons in a group of visitors to the river.

Willingness-to-pay – The maximum amount a person would be willing to pay, sacrifice or exchange for a good.

Tables

Table 1. Major river accesses and areas included in the 2004-2005 Missouri River Public Use Assessment. Accesses and areas are arranged from those on the Mississippi River to those at Gavins Point Dam near Yankton, South Dakota.

Access	Nearest Community
Maple Island Access (Mississippi River)	West Alton, Missouri
Riverfront Park (Mississippi River)	St. Louis, Missouri
Jones Confluence State Park	West Alton, Missouri
Columbia Bottom Conservation Area (Area)	St. Louis, Missouri
Bellefontaine Park	St. Louis, Missouri
Sioux Passage Park	St. Louis, Missouri
Sunset Park	St. Louis, Missouri
Jean Baptiste Point DuSable Park	St. Charles, Missouri
Blanchette Park	St. Charles, Missouri
Frontier Park	St. Charles, Missouri
Weldon Springs Conservation Area Access	Weldon Springs, Missouri
Klondike Park	Augusta, Missouri
Washington Bikeway	Washington, Missouri
Riverfront Park	Washington, Missouri
Colter's Landing	Washington, Missouri
New Haven Access	New Haven, Missouri
Hermann Ramp	Hermann, Missouri
Gasconade Park (Gasconade River)	Gasconade, Missouri
Portland Boat Ramp	Portland, Missouri
Chamois Access	Chamois, Missouri
Mokane Access	Mokane, Missouri
Smoky Waters Conservation Area	Jefferson City, Missouri
Bonnets Mill Access (Osage River)	Bonnets Mill, Missouri
Mari-Osa Access (Osage River)	Jefferson City, Missouri
Moreau 50 Access (Moreau River)	Jefferson City, Missouri
Carl Noren Access	Jefferson City, Missouri
Capitol View Access (Cedar Creek)	Jefferson City, Missouri
Marion Access	Marion, Missouri
Hartsburg Access	Hartsburg, Missouri
Cooper's Landing[a]	Easley, Missouri
Providence Access (Perche Creek)	Columbia, Missouri
Eagle Bluffs Conservation Area	Columbia, Missouri
Lupus (riverfront)	Lupus, Missouri
Katfish Katy's[b]	Huntsdale, Missouri
Taylor's Landing	Boonville, Missouri
Franklin Island Access	New Franklin, Missouri
De Bourgmont Access (Lamine River)	Pilot Grove, Missouri
Stump Island Access	Glasgow, Missouri
Lewis Mill Conservation Area	Glasgow, Missouri

Table 1. Continued

Access	Nearest Community
Brunswick Access (Grand River)	Brunswick, Missouri
Miami Riverfront Park	Miami, Missouri
Grand Pass Conservation Area (Area)	Miami, Missouri
Waverly Access	Waverly, Missouri
Crooked River Access (Crooked River)	Hardin, Missouri
Lexington Access	Lexington, Missouri
McIntyre Park	Napolean, Missouri
Fort Osage Access	Sibley, Missouri
Cooley Lake Access	Missouri City, Missouri
La Benite Access	Sugar Creek, Missouri
Riverfront Park Access	Kansas City, Missouri
Berkley Riverfront Park	Kansas City, Missouri
Kaw Point Access	Kansas City, Kansas
E. H. Young Riverfront Park	Kansas City, Missouri
English Landing Park	Parkville, Missouri
Schimmel City Access (Platte River)	Farley, Missouri
Leavenworth Park	Leavenworth, Kansas
Weston Bend State Park (trail to river)	Weston, Missouri
Independence Park	Atchison, Kansas
Benedictine Bottoms	Atchison, Kansas
Jentell Brees Access	St. Joseph, Missouri
Roseport Landing	Elwood, Kansas
Riverfront Park	St. Joseph, Missouri
French Bottoms Access	St. Joseph, Missouri
Arthur DuPree Memorial Conservation Area	St. Joseph, Missouri
Worthwine Island Conservation Area (Area)	Amazonia, Missouri
Nodaway Island Access	Amazonia, Missouri
Tom Brown Access	Amazonia, Missouri
Payne Landing Access	Forbes, Missouri
White Cloud Access	White Cloud, Kansas
Bob Brown Conservation Area (Area)	Forest City, Missouri
White Cloud Boat Ramp	White Cloud, Kansas
Rulo Access	Rulo, Nebraska
Rush Bottoms CA	Fortescue, Missouri
H. F. Thurnau Conservation Area (Area)	Craig, Missouri
Indian Cave State Park Access	Falls City, Nebraska
Deroin Bend Conservation Area	Corning, Missouri
Hoot Owl Bend Public Fishing Access	Langdon, Missouri
Langdon Bend Access	Langdon, Missouri
Brownville Recreation Access	Brownville, Nebraska
Peru Bottoms Wildlife Management Area	Peru, Nebraska
Watson Access (Nishnabotna River)	Rockport, Missouri
Upper Hamburg Bend Mitigation Project	Nebraska City, Nebraska
Hamburg Mitchell Access	Hamburg, Iowa
Riverview Marina State Recreation Area	Nebraska City, Nebraska
Waconda Ramp[c]	Union, Nebraska

Table 1. Continued.

Access	Nearest Community
Bartlett Boat Ramp	Bartlett, Iowa
Noodleman Island Mitigation Project	Bartlett, Iowa
Plattsmouth Boat Ramp	Plattsmouth, Nebraska
Randall W. Schilling Wildlife Management Area	Plattsmouth, Nebraska
Haworth Park Marina[b]	Bellevue, Nebraska
Haworth Park Boat Ramp	Bellevue, Nebraska
Lake Manawa State Park	Council Bluffs, Iowa
Sandpiper Cove Marina[b]	Omaha, Nebraska
Pottawattamie County Narrow River Park	Council Bluffs, Iowa
N. P. Dodge Park Boat Ramps	Omaha, Nebraska
N. P. Dodge Park Boat Marina[b]	Omaha, Nebraska
Boyer Chute National Wildlife Refuge (Area)	Fort Calhoun, Nebraska
Wilson Island State Park	Missouri Valley, Iowa
DeSoto National Wildlife Refuge (Area)	Missouri Valley, Iowa
Iowa side ramp	Blair, Nebraska
Optimist Park	Blair, Nebraska
Cottonwood Marina[b]	Blair, Nebraska
Tyson Bend Wildlife Management Area	Modale, Iowa
Remington Wildlife Management Area	Mondamin, Iowa
Soldier Bend Wildlife Management Area	Mondamin, Iowa
Woodland Campground Ramp[b]	Little Sioux, Iowa
Deer Island Wildlife Management Area	Little Sioux, Iowa
Pelican Point State Recreation Area	Tekamah, Nebraska
Huff-Warner Access	Blencoe, Iowa
Beck Memorial Park	Decatur, Nebraska
Hightree Pop&Docs[b]	Decatur, Nebraska
Lighthouse Marina[c]	Whiting, Iowa
Winnebago Bend Mitigation Site	Sloan, Iowa
Weedland Access	Sergeant Bluff, Iowa
Cottonwood Cove Park	Dakota City, Nebraska
Scenic Park	South Sioux City, Nebraska
Chris Larsen Marina[b]	Sioux City, Iowa
Chris Larsen Jr. Park Boat Ramp	Sioux City, Iowa
Ralph Rosenbaum Memorial Boat Ramp	Elk Point, South Dakota
Ponca State Park	Ponca, Nebraska
Mulberry Bend Wildlife Management Area	Maskell, Nebraska
Brooky Bottom Park	Wynot, Nebraska
St. Helena Access	St. Helena, Nebraska
Clay County Lakeside Use Area	Vermillion, South Dakota
South Dakota Public Water	Meckling, South Dakota
Riverside Park	Yankton, South Dakota
Lewis and Clark Park	Yankton, South Dakota
Gavins Point Dam Access, Nebraska	Aten , Nebraska

[a] Private access; no fee required.

[b] Private access; fee required.

[c] Private access; unknown if fee required.

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Table 2. U. S. Geological Survey (USGS) Missouri River gauge stations, mean daily river level and flow readings during the Missouri River Public Use Assessment from January 3, 2004 through January 28, 2005.

Location Name	USGS Gauging Station Number	River Stage[a] Ft. above zero		River Flow[b] CuFt/sec.	
		N[c]	Mean[d]	N[c]	Mean[d]
St. Charles, Missouri	06935965	392	13.24 (4.25)	392	77,118 (37,768)
Hermann, Missouri	06934500	392	9.53 (4.54)	392	74,812 (37,027)
Jefferson City, Missouri[e]	06910450	362	8.97 (4.42)	0	--
Boonville, Missouri	06909000	391	8.26 (4.12)	391	51,739 (27,514)
Glasgow, Missouri	06906500	391	11.51 (4.25)	391	49,240 (28,211)
Waverly, Missouri	06895500	392	10.22 (3.35)	392	40,840 (19,253)
Kansas City, Missouri	06893000	392	9.21 (3.97)	392	38,966 (18,826)
St. Joseph, Missouri	06818000	392	8.01 (3.78)	392	44,365 (29,698)
Rulo, Nebraska	06813500	392	7.44 (2.91)	392	31,033 (12,839)
Nebraska City, Nebraska	06807000	392	7.55 (2.66)	392	28,998 (10,356)
Omaha, Nebraska	06610000	392	13.47 (3.22)	392	24,634 (9,228)
Decatur, Nebraska	06601200	390	19.04 (2.75)	390	21,955 (7,599)
Sioux City, Iowa	06486000	391	12.04 (2.81)	390	20,930 (7,764)

[a] River stage is measured in feet above the relative elevation established as zero for the particular gauging station.

[b] River flow is measured in cubic feet per second of water flowing as established for the gauging station.

[c] Number of usable reading available from the gauging station.

[d] Standard deviation of the readings are reported in parentheses.

[e] The USGS gauging station at Jefferson City, Missouri only reported the stage of the Missouri River. The USGS Internet web site did not have data available for 24 days, and reported missing readings for 6 days.

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Table 3. Sampling intervals (strata) for measuring public use of the Missouri River and its tributaries.

Sampling Interval	First Date of Interval	Last Date of Interval
1	1/3/2004	1/30/2004
2	1/31/2004	2/27/2004
3	2/28/2004	3/26/2004
4	3/27/2004	4/23/2004
5	4/24/2004	5/21/2004
6	5/22/2004	6/18/2004
7	6/19/2004	7/16/2004
8	7/17/2004	8/13/2004
9	8/14/2004	9/10/2004
10	9/11/2004	10/8/2004
11	10/9/2004	11/5/2004
12	11/6/2004	12/3/2004
13	12/4/2004	12/31/2004
14	1/1/2005	1/28/2005

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Table 4. List of river segments used for economic analysis.

Segment	Description
1.1	Maple Island
1.2	St. Louis – Jefferson City
1.3	Mari-Osa Access
1.4	Jefferson City – Miami
1.5	Miami – Atchison
1.6	Atchison – Iowa-Missouri state line
2.6	Nebraska-Kansas state line
3	Iowa-Missouri state line – Platte River
4	Platte River – N. P. Dodge Park Marina
5	Boyer Chute and Desoto National Wildlife Refuges
6	Wilson Island State Park – Weedland Access
7	Cottonwood Cove Park at Dakota City, Nebraska – Big Sioux River
8	Big Sioux River – Gavins Point Dam

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Table 5. List of site types uses in economic analysis.

Site Type	Description
Area	One of the 7 conservation areas or refuges
Access	Accesses and access groups
Bus-route	Bus-route groups

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Table 6. List of respondent explanatory variables used in the discrete choice method for estimating consumer surplus value for the Missouri River Public Use Assessment.

Variable	Codes Used
Age	Age (category midpoints)
Gender	1 if male, 0 if female
Race	0 if white, 1 if not
Disabled	1 if disabled, 0 if not
Income	Zip code income

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Table 7. Estimates public use of Missouri River and its major tributaries[a] influenced by the Missouri River from Gavins Point Dam to the Mississippi River confluence for the period January 3, 2004 through January 28, 2005.

	Individual-Visits			Hours			Average	
Activity	Estimate	Standard Error	Percent	Estimate	Standard Error	Percent	Length of Visits (Hrs)	Standard Error
Fishing								
Rod/Reel - Non-tournament	363,170	14,540	17.78	1,136,690	50,500	17.43	3.1	0.19
Oth. Methods - Non-tournament	78,590	5,420	3.85	210,110	20,740	3.22	2.7	0.32
Rod/Reel & Oth. Meths. - Non-tour.	7,140	1,270	0.35	31,050	4,990	0.48	4.3	1.04
Rod/Reel - Tournament	640	220	0.03	4,420	1,680	0.07	6.9	3.53
Oth. Methods - Tournament	140	50	0.01	430	150	0.01	3.1	1.54
Rod/Reel & Oth. Meths. - Tour.	60	40	0.00	130	80	0.00	2.2	1.77
Commercial	32,580	8,070	1.59	32,060	6,800	0.49	1.0	0.32
Snagging Paddlefish (Nebraska)	4,100	910	0.20	14,350	3,660	0.22	3.5	1.19
Collecting Bait	2,530	610	0.12	2,490	560	0.04	1.0	0.32
Fishing Subtotal	**486,070**	**17,650**	**23.79**	**1,431,650**	**55,500**	**21.96**	**2.9**	**0.16**
Hunting								
Deer, gun or muzzleloader	36,090	7,310	1.77	230,720	114,980	3.54	6.4	3.44
Deer, bow	7,600	1,600	0.37	45,010	8,160	0.69	5.9	1.64
Turkey	4,020	1,540	0.20	18,630	7,180	0.29	4.6	2.52
Waterfowl	36,000	7,930	1.76	214,640	54,420	3.29	6.0	2.00
Dove	6,200	1,570	0.30	14,420	3,100	0.22	2.3	0.77
Squirrel	690	610	0.03	1,530	1,220	0.02	2.2	2.64
Rabbit	3,030	1,220	0.15	4,490	2,140	0.07	1.5	0.92
Quail	1,150	710	0.06	3,090	1,860	0.05	2.7	2.32
Pheasant	9,460	3,880	0.46	46,360	27,710	0.71	4.9	3.55
Crow	50	20	0.00	120	70	0.00	2.4	1.84
Raccoon	50	20	0.00	480	390	0.01	9.6	9.66
Fox	4	3	0.00	29	24	0.00	7.3	9.18
Predator	530	270	0.03	1,450	790	0.02	2.7	2.00
Other Hunting	220	180	0.01	840	760	0.01	3.8	4.76
Hunting Subtotal	**101,840**	**11,320**	**4.98**	**581,760**	**127,530**	**8.92**	**5.71**	**1.40**

Table 7. Continued.

Activity	Individual-Visits Estimate	Individual-Visits Standard Error	Individual-Visits Percent	Hours Estimate	Hours Standard Error	Hours Percent	Average Length of Visits (Hrs)	Standard Error
Trapping	9,850	5,810	0.48	5,290	1,570	0.08	0.5	0.36
Frogging	30	30	0.00	20	20	0.00	0.7	0.98
Non-Consumptive Activities								
Camping, dept. site	29,640	3,310	1.45	1,289,940	228,130	19.78	43.5	9.10
Camping, other	38,200	6,780	1.87	886,510	171,410	13.60	23.2	6.09
Picnicking, dept. site	8,160	970	0.40	9,580	1,250	0.15	1.2	0.21
Picnicking, other	30,480	4,080	1.49	33,610	4,180	0.52	1.1	0.20
Swimming	24,010	4,340	1.18	30,080	4,330	0.46	1.3	0.29
Floating	6,080	1,020	0.30	16,900	2,910	0.26	2.8	0.67
Boating	243,130	13,930	11.90	853,680	45,270	13.09	3.5	0.27
Canoeing	13,980	2,750	0.68	125,750	31,480	1.93	9.0	2.86
Nature Study	56,030	3,450	2.74	51,100	4,960	0.78	0.9	0.10
Loafing	88,860	6,280	4.35	96,640	20,100	1.48	1.1	0.24
Sightseeing	597,070	16,810	29.23	415,520	16,030	6.37	0.7	0.03
Cottage Use	2,260	1,050	0.11	8,540	2,900	0.13	3.8	2.17
Off-road Vehicle	9,390	2,620	0.46	15,410	4,730	0.24	1.6	0.68
Gathering Products	53,360	7,070	2.61	83,850	11,250	1.29	1.6	0.30
Target Shooting	10,230	2,620	0.50	9,710	2,920	0.15	0.9	0.37
Rappelling	1,060	510	0.05	1,060	590	0.02	1.0	0.74
Caving	1,700	200	0.08	2,010	640	0.03	1.2	0.40
Waterskiing	2,950	660	0.14	7,860	3,420	0.12	2.7	1.30
Biking	42,740	7,000	2.09	66,080	10,790	1.01	1.5	0.36
Jet Skiing	10,270	960	0.50	26,600	2,680	0.41	2.6	0.36
Sunbathing	2,900	640	0.14	6,290	1,400	0.10	2.2	0.68
Partying	12,950	1,700	0.63	40,920	6,250	0.63	3.2	0.64
Hiking	27,370	3,410	1.34	48,840	6,760	0.75	1.8	0.33
Exercising	179,340	11,290	8.78	188,920	25,200	2.90	1.1	0.16
Preparing for Hunting Season	30,760	4,120	1.51	50,740	11,070	0.78	1.6	0.42
Tuning (or trying out) Boat and Motor	25,730	4,150	1.26	30,790	6,070	0.47	1.2	0.30

Table 7. Continued.

Activity	Individual-Visits Estimate	Individual-Visits Standard Error	Individual-Visits Percent	Hours Estimate	Hours Standard Error	Hours Percent	Average Length of Visits (Hrs)	Standard Error
Lewis and Clark Event and Trail Tour	5,900	950	0.29	24,330	7,450	0.37	4.1	1.43
Photography	18,980	3,310	0.93	14,500	3,090	0.22	0.8	0.21
Playground/Telephone/Restroom	10,840	1,780	0.53	7,970	1,600	0.12	0.7	0.19
Sporting Activities	3,630	890	0.18	4,970	1,080	0.08	1.4	0.45
Dog Training	1,600	760	0.08	750	380	0.01	0.5	0.32
Observed Paddlefish Snagging	5,020	1,770	0.25	7,470	2,590	0.11	1.5	0.74
Geocaching	330	130	0.02	190	60	0.00	0.6	0.28
Education Tour	440	250	0.02	1,290	960	0.02	2.9	2.70
Oregon & Calif. Trail Tour	360	320	0.02	360	320	0.01	1.0	1.24
Horseback Riding	310	80	0.02	1,580	660	0.02	5.1	2.48
Fireworks	420	360	0.02	840	730	0.01	2.0	2.41
Ice Skating	10	10	0.00	20	10	0.00	2.0	2.00
Arts & Crafts	1,430	1,350	0.07	2,840	2,710	0.04	2.0	2.66
Releasing Wildlife	410	250	0.02	120	70	0.00	0.3	0.24
Model Airplane Flying	100	90	0.00	190	170	0.00	1.9	2.53
Motorcycling	30	20	0.00	10	10	0.00	0.3	0.25
MO River Relief	70	40	0.00	4,540	3,800	0.07	64.9	65.47
Non-Consumptive Activities Subtotal	**1,475,960**	**31,490**	**72.25**	**4,468,580**	**308,520**	**68.53**	**3.0**	**0.22**
Undefined Use	13,980	2,380	0.68	32,530	19,070	0.50	2.3	1.42
Work Trip	7,280	1,890	0.36	15,060	6,890	0.23	2.1	1.09
Unknown	320	120	0.02	490	200	0.01	1.5	0.85
Overall Total	**2,042,980**	**37,970**	**100.00**	**6,520,330**	**374,300**	**100.00**	**3.2**	**0.19**

[a] Tributaries included in this study were: the Mississippi River from the mouth of the Missouri River up to Lock and Dam 26; the lower Gasconade River to just above Gascony Village; the lower Osage River to above the Mari-Osa Access; the Lamine River up to the De Bourgmont Access; the lower portion of the Kansas (Kaw) River at Kaw Point Access in Kansas City, Kansas; the Platte River up to the Schimmel City Access; the Nishnabotna River up to Watson Access; and any usage of any other tributaries that river users reported as Missouri River Use.

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Table 8. Estimates of successful parties, number of fish caught, number of fish harvested and the harvest rate for different fish species taken from the Missouri River and its major tributaries[a] influenced by the Missouri River from Gavins Point Dam to the Mississippi River confluence for the period from January 3, 2004 through January 28, 2005.

Species	Successful Parties	Standard Error	Total Catch	Standard Error	Total Harvest	Standard Error	Harvest Rate (per 100 Hrs)	Standard Error
Paddlefish	4,670	780	18,490	3,560	3,920	890	0.27	0.06
Lake Sturgeon	1,070	510	1,750	610	40	20	0.00	0.00
Shovelnose Sturgeon	6,440	1,320	19,480	4,240	2,760	490	0.19	0.04
Pallid Sturgeon	810	270	1,320	370	90[b]	50[b]	0.01[b]	0.00[b]
Shortnose Gar	1,090	110	2,420	330	280	90	0.02	0.01
Spotted Gar	6	5	50	40	0	0	0.00	0.00
Longnose Gar	3,220	710	5,910	1,510	620	180	0.04	0.01
Gar sp/pref	3	3	20	20	20	20	0.00	0.00
Bowfin	10	9	30	30	30	30	0.00	0.00
Goldeye	1,740	460	5,650	1,350	1,330	670	0.09	0.05
Skipjack Herring	2,920	490	9,120	1,910	1,580	430	0.11	0.03
Gizzard Shad	100	40	1,230	760	1,040	740	0.07	0.05
Threadfin Shad	20	10	90	80	0	0	0.00	0.00
Trout sp/pref	170	50	590	170	560	170	0.04	0.01
Bigmouth Buffalo	1,030	170	6,100	980	5,720	960	0.40	0.07
Black Buffalo	300	50	3,720	1,430	3,560	1,430	0.25	0.10
Smallmouth Buffalo	1,190	320	13,660	4,680	13,160	4,670	0.92	0.33
Buffalo sp/pref	3	3	10	9	10	9	0.00	0.00
Quillback	830	530	2,880	1,830	1,850	1,570	0.13	0.11
River Carpsucker	310	110	660	290	230	110	0.02	0.01
Highfin Carpsucker	10	10	10	10	10	10	0.00	0.00
Carpsucker sp	10	10	20	20	0	0	0.00	0.00
Blue Sucker	2,900	2,310	3,180	2,320	240	140	0.02	0.01
White Sucker	50	20	70	30	30	20	0.00	0.00
Shorthead Redhorse	180	130	260	150	50	40	0.00	0.00

Table 8. Continued.

Species	Successful Parties	Standard Error	Total Catch	Standard Error	Total Harvest	Standard Error	Harvest Rate (per 100 Hrs)	Standard Error
Carp sp.	20,140	2,250	45,270	3,850	27,740	3,370	1.94	0.25
Grass Carp	800	140	3,340	890	2,000	510	0.14	0.04
Silver Carp	780	290	3,480	1,260	2,720	1,210	0.19	0.09
Bighead Carp	2,630	580	14,530	3,820	9,050	3,440	0.63	0.24
Channel Catfish	63,780	5,360	222,070	28,300	112,940	11,780	7.89	0.88
Blue Catfish	24,430	2,350	56,220	4,370	34,540	3,180	2.41	0.24
Flathead Catfish	18,710	1,710	30,950	2,920	21,270	2,170	1.49	0.16
Catfish sp/pref	30	20	100	70	20	20	0.00	0.00
Black Bullhead	330	90	1,260	370	470	150	0.03	0.01
Yellow Bullhead	540	160	1,790	550	1,010	480	0.07	0.03
Brown Bullhead	10	7	11	7	10	7	0.00	0.00
Bullhead sp/pref	10	8	20	20	0	0	0.00	0.00
Grass Pickerel	4	4	9	7	0	0	0.00	0.00
Northern Pike	170	50	280	80	200	60	0.01	0.00
Eel	120	100	120	100	7	6	0.00	0.00
White Perch	1,540	510	3,180	950	2,440	900	0.17	0.06
White Bass	3,060	350	11,060	1,330	6,900	1,050	0.48	0.08
Striped Bass Hybrid	660	130	1,930	380	680	180	0.05	0.01
Yellow Bass	140	60	440	160	110	50	0.01	0.00
Striped Bass	390	60	1,060	250	590	190	0.04	0.01
Sauger	890	110	2,190	350	1,030	210	0.07	0.01
Walleye	4,330	320	15,580	1,850	5,820	720	0.41	0.05
Spotted Bass	5	5	10	10	0	0	0.00	0.00
Smallmouth Bass	230	70	1,770	820	590	350	0.04	0.02
Largemouth Bass	1,380	210	4,180	630	880	420	0.06	0.03
Warmouth	20	10	60	30	10	10	0.00	0.00
Green Sunfish	130	80	250	110	50	40	0.00	0.00
Bluegill	1,100	240	4,640	1,040	1,470	370	0.10	0.03
Black Crappie	3,430	670	22,930	3,690	11,460	3,340	0.80	0.24

Table 8. Continued.

Species	Successful Parties	Standard Error	Total Catch	Standard Error	Total Harvest	Standard Error	Harvest Rate (per 100 Hrs)	Standard Error
Crappie sp/pref	10	10	10	10	10	10	0.00	0.00
Freshwater Drum	22,760	3,400	59,920	14,230	17,720	2,660	1.24	0.19
Fishing/anything	790	170	1,770	420	870	240	0.06	0.02
Fish Total			**611,070**	**34,130**	**301,000**	**15,160**	**21.02**	**1.34**

[a] Tributaries included in this study were: the Mississippi River from the mouth of the Missouri River up to Lock and Dam 26; the lower Gasconade River to just above Gascony Village; the lower Osage River to above the Mari-Osa Access; the Lamine River up to the De Bourgmont Access; the lower portion of the Kansas (Kaw) River at Kaw Point Access in Kansas City, Kansas; the Platte River up to the Schimmel City Access; the Nishnabotna River up to Watson Access; and any usage of any other tributaries that river users reported as Missouri River Use.

[b] Species is listed as a federal endangered species under the Endangered Species Act, therefore, harvest of this species was not legal. Estimate of harvest reflects what the survey clerk recorded as being reported by the interviewed public user.

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Table 9. Estimates of successful parties, number of species shot, number of species retrieved and the harvest rate for different wildlife species taken from the Missouri River and its major tributaries[a] influenced by the Missouri River from Gavins Point Dam to the Mississippi River confluence for the period from January 3, 2004 through January 28, 2005.

Species	Successful Parties	Standard Error	Total Shot	Standard Error	Total Harvest	Standard Error	Harvest Rate (per 100 Hrs)	Standard Error
White-tailed Deer	3,870	1,610	4,040	1,610	4,040	1,610	0.70	0.32
Squirrel	630	610	840	620	840	620	0.14	0.11
Rabbit	40	20	80	30	80	30	0.01	0.01
Raccoon	210	40	1,150	280	970	220	0.17	0.05
Beaver	50	20	560	390	130	50	0.02	0.01
Mink	7	7	14	15	0	0	0.00	0.00
Bobcat	30	20	40	20	17	14	0.00	0.00
Red Fox	13	9	13	9	6	5	0.00	0.00
Opossum	40	10	70	30	70	30	0.01	0.01
Coyote	24	9	30	10	30	10	0.00	0.00
Mourning Dove	1,620	390	16,010	4,930	15,940	4,920	2.74	1.04
Bobwhite Quail	19	14	19	14	19	14	0.00	0.00
Crow	11	11	90	90	90	90	0.02	0.02
Turkey	920	690	920	690	920	690	0.16	0.12
Pheasant	1,950	950	4,790	2,830	4,790	2,830	0.82	0.52
Mallard	9,770	3,390	20,040	4,410	20,020	4,410	3.44	1.07
Wigeon	390	100	480	110	480	110	0.08	0.03
Blue-Winged Teal	800	610	2,180	1,820	2,180	1,820	0.37	0.32
Green-Winged Teal	560	70	1,290	190	1,290	190	0.22	0.06
Pintail	100	20	140	30	140	30	0.02	0.01
Shoveler	270	40	420	80	420	80	0.07	0.02
Gadwall	560	60	1,150	180	1,150	180	0.20	0.05
Wood Duck	130	40	170	50	170	50	0.03	0.01
Redhead	12	7	12	7	12	7	0.00	0.00
Ring-Necked Duck	120	40	150	50	150	50	0.02	0.01
Greater Scaup	16	8	21	11	21	11	0.00	0.00

Table 9. Continued.

Species	Successful Parties	Standard Error	Total Catch	Standard Error	Total Harvest	Standard Error	Harvest Rate (per 100 Hrs)	Standard Error
Lesser Scaup	30	20	120	90	120	90	0.02	0.02
Goldeneye	12	6	20	10	20	10	0.00	0.00
Bufflehead	11	11	20	20	23	22	0.00	0.00
Common Merganser	1,460	1,230	1,470	1,230	1,470	1,230	0.25	0.22
Other Ducks	17	8	21	10	21	10	0.00	0.00
Canada Goose	240	40	650	150	650	150	0.11	0.04
Snow Goose	690	540	4,940	4,340	4,940	4,340	0.85	0.77
Ross Goose	4	4	8	7	8	7	0.00	0.00
Coot	30	10	30	10	30	10	0.01	0.00
Woodcock	11	5	20	20	20	20	0.00	0.00
Turtle	210	50	340	100	40	30	0.01	0.00
Clam	7	6	7	6	7	6	0.00	0.00
Hunting/Unknown	3	3	40	30	40	30	0.01	0.01
Hunting Total	**50,160**	**5,490**	**62,390**	**8,900**	**61,340**	**8,880**	**10.54**	**2.77**
Frog	0	0	0	0	0	0	0.00	0.00
Frogging Total	**10**	**9**	**0**	**0**	**0**	**0**	**0.00**	**0.00**

[a] Tributaries included in this study were: the Mississippi River from the mouth of the Missouri River up to Lock and Dam 26; the lower Gasconade River to just above Gascony Village; the lower Osage River to above the Mari-Osa Access; the Lamine River up to the De Bourgmont Access; the lower portion of the Kansas (Kaw) River at Kaw Point Access in Kansas City, Kansas; the Platte River up to the Schimmel City Access; the Nishnabotna River up to Watson Access; and any usage of any other tributaries that river users reported as Missouri River Use.

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Table 10. Socio-demographic characteristics public users of the Missouri River and its major tributaries[a] influenced by the Missouri River from Gavins Point Dam to the Mississippi River confluence for the period at January 3, 2004 through January 28, 2005.

Characteristic	Estimate	Standard Error	Percent
Age			
0-11 Years Old	148,240	6,940	7.26
12-15 Years Old	67,490	5,150	3.30
16-17 Years Old	40,530	4,580	1.98
18-24 Years Old	200,330	12,140	9.81
25-34 Years Old	308,160	12,190	15.08
35-44 Years Old	402,750	12,170	19.71
45-64 Years Old	624,590	16,270	30.57
65 or Older	242,270	8,110	11.86
Unknown Age	8,620	1,870	0.42
Gender			
Male	1,474,810	28,970	72.19
Female	561,520	16,720	27.49
Unknown Gender	6,640	1,350	0.33
Race			
White	1,899,390	36,290	92.97
Black or African-American	81,750	5,450	4.00
Hispanic or Latino	26,550	3,080	1.30
Asian	7,570	1,140	0.37
American Indian	8,260	1,130	0.40
Other	7,110	2,290	0.35
Unknown race	12,360	1,980	0.60
Impairment			
No Impairment	1,870,090	35,540	91.54
Hearing Impaired	41,560	4,770	2.03
Visually Impaired	7,970	1,220	0.39
Learning Impaired	5,960	1,410	0.29
Mobility Impaired	54,340	4,340	2.66
Other Impairment	43,900	4,430	2.15
Unknown Impairment Status	18,560	2,440	0.91
Permit Ownership			
Owned a fishing or hunting permit	1,014,680	24,450	49.67
Did Not own a fishing or hunting permit	974,780	23,950	47.71
Unknown permit ownership status	53,520	6,650	2.62

[a] Tributaries included in this study were: the Mississippi River from the mouth of the Missouri River up to Lock and Dam 26; the lower Gasconade River to just above Gascony Village; the lower Osage River to above the Mari-Osa Access; the Lamine River up to the De Bourgmont Access; the lower portion of the Kansas (Kaw) River at Kaw Point Access in Kansas City, Kansas; the Platte River up to the Schimmel City Access; the Nishnabotna River up to Watson Access; and any usage of any other tributaries that river users reported as Missouri River Use.

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Table 11. Parameter estimates from the Travel Cost Method for estimating Consumer Surplus value for the public accesses along the Missouri River and its major tributaries[a] influenced by the Missouri River from Gavins Point Dam to the Mississippi River confluence for the period at January 3, 2004 through January 28, 2005.

Parameter	Estimate	Standard Error	Pr > ChiSq
Intercept	-3.2676	0.00402	<.0001
TC	-0.0650	0.000104	<.0001
Segment 1.1	-1.5252	0.0174	<.0001
Segment 1.2	-0.5644	0.00442	<.0001
Segment 1.3	1.3397	0.0262	<.0001
Segment 1.4	-0.8635	0.00539	<.0001
Segment 1.5	-0.9750	0.00559	<.0001
Segment 1.6	-0.8541	0.00538	<.0001
Segment 2.6	-1.5656	0.00733	<.0001
Segment 3	-0.6654	0.00755	<.0001
Segment 4	0.8442	0.00580	<.0001
Segment 5	1.5858	0.0226	<.0001
Segment 6	0.5920	0.00748	<.0001
Segment 7	1.6992	0.00981	<.0001
TC*Segment 1.1	0.0334	0.000525	<.0001
TC*Segment 1.2	0.0117	0.000123	<.0001
TC*Segment 1.3	-0.00805	0.000717	<.0001
TC*Segment 1.4	0.0160	0.000129	<.0001
TC*Segment 1.5	-0.00175	0.000167	<.0001
TC*Segment 1.6	0.00658	0.000150	<.0001
TC*Segment 2.6	0.0239	0.000150	<.0001
TC*Segment 3	0.00316	0.000192	<.0001
TC*Segment 4	-0.0157	0.000162	<.0001
TC*Segment 5	-0.0483	0.000647	<.0001
TC*Segment 6	-0.00461	0.000155	<.0001
TC*Segment 7	-0.0268	0.000286	<.0001
Access	2.1276	0.00356	<.0001
Area	1.5730	0.00575	<.0001
TC* Access	-0.0343	0.000077	<.0001
TC* Area	0.00118	0.000119	<.0001

N=3,807 zones

[a] Tributaries included in this study were: the Mississippi River from the mouth of the Missouri River up to Lock and Dam 26; the lower Gasconade River to just above Gascony Village; the lower Osage River to above the Mari-Osa Access; the Lamine River up to the De Bourgmont Access; the lower portion of the Kansas (Kaw) River at Kaw Point Access in Kansas City, Kansas; the Platte River up to the Schimmel City Access; the Nishnabotna River up to Watson Access; and any usage of any other tributaries that river users reported as Missouri River Use. Return to page 57.

Table 12. Parameter estimates from the Discrete Choice Method for estimating Consumer Surplus value for the public accesses along the Missouri River and its major tributaries[a] influenced by the Missouri River from Gavins Point Dam to the Mississippi River confluence for the period at January 3, 2004 through January 28, 2005.

Parameter	Estimate	Standard Error	Pr > ChiSq
Intercept	1.4287	0.0116	<.0001
Bid	-0.0312	0.000080	<.0001
Age	-0.00687	0.000133	<.0001
Gender	-0.0471	0.00256	<.0001
Race	-0.1181	0.00439	<.0001
Disability	-0.0935	0.0144	<.0001
Segment 1.1	-0.0667	0.00559	<.0001
Segment 1.2	-0.3748	0.00479	<.0001
Segment 1.3	0.0880	0.0233	0.0002
Segment 1.4	0.1617	0.00743	<.0001
Segment 1.5	-0.3982	0.00641	<.0001
Segment 1.6	-0.1209	0.00656	<.0001
Segment 2.6	-0.5031	0.00904	<.0001
Segment 3	0.4295	0.00857	<.0001
Segment 4	0.1286	0.00690	<.0001
Segment 5	-0.0803	0.0125	<.0001
Segment 6	0.7576	0.00834	<.0001
Segment 7	-0.6336	0.0130	<.0001
Access	-0.1197	0.00392	<.0001
Area	0.1355	0.00630	<.0001
Per capita income	0.000022	4.181E-7	<.0001

[a] Tributaries included in this study were: the Mississippi River from the mouth of the Missouri River up to Lock and Dam 26; the lower Gasconade River to just above Gascony Village; the lower Osage River to above the Mari-Osa Access; the Lamine River up to the De Bourgmont Access; the lower portion of the Kansas (Kaw) River at Kaw Point Access in Kansas City, Kansas; the Platte River up to the Schimmel City Access; the Nishnabotna River up to Watson Access; and any usage of any other tributaries that river users reported as Missouri River Use.

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Table 13. Visitation information for Indian Cave State Park near Falls City, Nebraska for each month during 2004 and 2005. Data supplied by Nebraska Game and Parks Commission.

Month	2004	2005
January	400	575
February	300	450
March	1,300	1,200
April	7,000	7,000
May	22,750	27,510
June	12,950	19,950
July	15,750	20,055
August	14,000	14,450
September	23,000	25,245
October	59,500	55,500
November	7,700	7,500
December	2,500	2,000
Total	**167,150**	**181,435**

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Table 14. Counts of the number of campers at Haworth Park in Bellevue, Nebraska, during 2004. Data provided by the park manager at Haworth Park.

Month	Parties	Individuals	Number of Nights
January	20	33	64
February	13	20	61
March	54	143	124
April	130	305	328
May	317	756	733
June	581	1,551	1,604
July	349	821	1,041
August	457	1,122	1,065
September	294	739	897
October	159	337	452
November	102	366	449
December	28	50	126
Total	**2,504**	**6,243**	**6,944**

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Table 15. Estimates concerning facilities at Residences as derived from the questionnaire sent at the end of the year to the respondent Residences group. Return to page 59.

The place that you have along the Missouri River is a *(check one)*:		
	Proportion	Standard Error
Members Club	0.038	0.000151
Investment that is seldom visited	0.033	0.000130
Weekend/Vacation spot	0.497	0.001029
Summer residence	0.191	0.000636
Primary year-round residence	0.016	0.000066
Place that was sold to someone else during 2004	0.011	0.000044
Place that was sold to someone else before 2004	0.104	0.000383
I don't have a place along the Missouri River	0.071	0.000272
Other	0	0

The place that you have along the Missouri River is *(check one)*:		
	Proportion	Standard Error
Owned by you	0.778	0.000835
Land owned by someone else, but improvements, including shelters, are owned by you	0.123	0.000523
Rented from someone else, including retal of buildings, trailer, or other improvements	0.006	0.000030
Owned by a group or club	0.068	0.000306
Owned entirely by someone else and they let you use it	0.019	0.000088
Other	0.006	0.000030

The place that you have along the Missouri River is a *(check one)*:		
	Proportion	Standard Error
House or cabin	0.453	0.001207
House trailer	0.211	0.000811
Area where you set up your RV, camping trailer, or tent	0.267	0.000953
Other	0.068	0.00031

Does your place along the Missouri River have *(check one response for each)*:		
	Proportion	Standard Error
Sleeping facilities		
Yes	0.843	0.000687
No	0.157	0.000687
Indoor plumbing		
Yes	0.830	0.000733
No	0.170	0.000733
Electricity		
Yes	0.882	0.000507
No	0.11	0.000507
A boat dock		
Yes	0.604	0.001233
No	0.396	0.001233

Table 16. Estimates of use at private lands and residences without public access along the Missouri River and its major tributaries[a] influenced by the Missouri River from St. Louis, Missouri to Gavins Point Dam near Yankton, South Dakota for the period from January 31, 2004 through January 28, 2005.

	Individual-Days			Hours			Average	
Activity	Estimate	Standard Error	Percent	Estimate	Standard Error	Percent	Length of Visits(Hrs)	Standard Error
Fishing								
Rod/Reel - Non-tournament	18,710	1,840	9.15	58,270	6,430	2.26	3.1	0.5
Oth. Methods - Non-tournament	4,170	990	2.04	18,910	8,920	0.73	4.5	2.4
Rod/Reel & Oth. Meths. - Non-tour.	1,040	450	0.51	5,070	2,010	0.20	4.9	2.9
Rod/Reel - Tournament	450	150	0.22	2,400	760	0.09	5.3	2.5
Rod/Reel & Oth. Meths. - Tour.	90	50	0.04	310	170	0.01	3.4	2.7
Commercial	30	30	0.01	90	80	0.00	3	4
Snagging Paddlefish	1,320	550	0.65	6,300	2,620	0.24	4.8	2.8
Fishing Subtotal	**25,100**	**2,340**	**12.27**	**91,720**	**12,010**	**3.56**	**3.7**	**0.6**
Hunting								
Deer, gun or muzzleloader	1,000	310	0.49	6,290	2,240	0.24	6.3	3
Deer, bow	740	300	0.36	2,520	980	0.10	3.4	1.9
Rabbit	280	220	0.14	290	220	0.01	1	1.1
Raccoon	190	110	0.09	520	320	0.02	2.7	2.3
Waterfowl	1,880	540	0.92	7,440	2,290	0.29	4	1.7
Fox	160	120	0.08	3,360	3,080	0.13	21	24.9
Crow	130	120	0.06	440	410	0.02	3.4	4.4
Squirrel	50	40	0.02	110	90	0.00	2.2	2.5
Turkey	110	80	0.05	420	300	0.02	3.8	3.9
Pheasant	330	140	0.16	1,220	610	0.05	3.7	2.4
Hunting Subtotal	**4,740**	**930**	**2.32**	**22,610**	**5,290**	**0.88**	**4.8**	**1.5**
Frogging	220	140	0.11	320.0	190.0	0.01	1.5	1.3
Trapping	60	60	0.03	120.0	120.0	0.00	2	2.8

Table 16. Continued.

Activity	Individual-Days Estimate	Individual-Days Standard Error	Individual-Days Percent	Hours Estimate	Hours Standard Error	Hours Percent	Average Length of Visits (Hrs)	Standard Error
Non-Consumptive Activities								
Camping, dept. site	620	390	0.30	8,670	5,200	0.34	14	12.2
Camping, other	16,160	3,000	7.90	278,100	62,380	10.81	17.2	5
Picnicking, dept. site	670	340	0.33	3,830	2,070	0.15	5.7	4.2
Picnicking, other	11,040	1,760	5.40	60,720	12,150	2.36	5.5	1.4
Swimming	5,300	1,090	2.59	16,300	3,810	0.63	3.1	1
Floating	1,910	550	0.93	5,160	1,620	0.20	2.7	1.2
Boating	33,040	3,360	16.15	120,840	12,610	4.70	3.7	0.5
Canoeing	500	230	0.24	1,050	570	0.04	2.1	1.5
Nature Study	5,500	1,110	2.69	14,590	4,160	0.57	2.7	0.9
Loafing	30,030	3,250	14.68	176,720	22,440	6.87	5.9	1
Sightseeing	4,410	870	2.16	13,030	3,210	0.51	3	0.9
Cottage Use	91,630	7,850	44.80	1,438,090	141,270	55.88	15.7	2
Off-road Vehicle	6,760	1,630	3.31	18,330	4,620	0.71	2.7	0.9
Gathering Products	1,950	450	0.95	5,040	1,470	0.20	2.6	1
Collecting Bait	140	70	0.07	370	190	0.01	2.6	1.9
Target Shooting	2,240	610	1.10	2,910	760	0.11	1.3	0.5
Caving	20	10	0.01	130	120	0.01	6.5	6.8
Waterskiing	1,650	420	0.81	5,400	1,550	0.21	3.3	1.3
Biking	1,120	320	0.55	1,450	380	0.06	1.3	0.5
Jet Skiing	3,680	880	1.80	15,350	4,110	0.60	4.2	1.5
Sunbathing	860	240	0.42	1,730	500	0.07	2	0.8
Partying	26,830	4,140	13.12	184,350	37,200	7.16	6.9	1.7
Hiking	1,140	310	0.56	1,620	520	0.06	1.4	0.6
Exercising	10,700	2,130	5.23	9,640	1,840	0.37	0.9	0.2
Preparing for Hunting Season	1,370	400	0.67	2,960	830	0.12	2.2	0.9
Tuning (or trying out) Boat and Motor	1,170	240	0.57	2,660	840	0.10	2.3	0.9
Lewis and Clark Event and Trail Tour	450	160	0.22	1,570	630	0.06	3.5	1.9

Table 16. Continued.

Activity	Individual-Days Estimate	Individual-Days Standard Error	Individual-Days Percent	Hours Estimate	Hours Standard Error	Hours Percent	Average Length of Visits (Hrs)	Standard Error
Photography	1,160	480	0.57	1,970	920	0.08	1.7	1.1
Playground/Telephone/Restroom	20	10	0.01	20	10	0.00	1	0.7
Sporting Activities	1,230	370	0.60	3,490	1,640	0.14	2.8	1.6
Arts & Crafts	100	90	0.05	390	370	0.02	3.9	5.1
Non-Consumptive Activities Subtotal	**182,880**	**9,530**	89.42	**2,396,090**	**171,160**	93.10	**13.1**	**1.2**
Undefined Use	8,820	2,480	4.31	62,550	29,300	2.43	7.1	3.9
Work Trip	16,810	1,700	8.22	78,790	11,190	3.06	4.7	0.8
Unknown	20	20	0.01	140	130	0.01	7	9.6
Overall Totals	**204,520**	**9,610**	**100.00**	**2,573,560**	**186,290**	**100.00**	**12.6**	**1.1**

[a] Tributaries included in this study were: the Mississippi River from the mouth of the Missouri River up to Lock and Dam 26; the lower Gasconade River to just above Gascony Village; the lower Osage River to above the Mari-Osa Access; the Lamine River up to the De Bourgmont Access; the lower portion of the Kansas (Kaw) River at Kaw Point Access in Kansas City, Kansas; the Platte River up to the Schimmel City Access; the Nishnabotna River up to Watson Access; and any usage of any other tributaries that river users reported as Missouri River Use.

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Table 17. Estimates of successful parties, number of fish caught, number of fish harvested and the harvest rate for different fish species taken by anglers from Missouri River and its major tributaries[a] influenced by the Missouri River reporting as residences from St. Louis, Missouri to Gavins Point Dam near Yankton, South Dakota for the period from January 31, 2004 through January 28, 2005.

Species	Successful Parties	Standard Error	Total Catch	Standard Error	Total Harvest	Standard Error	Harvest Rate (per 100 Hrs)	Standard Error
Paddlefish	20	10	90	80	40	40	0.05	0.05
Lake Sturgeon	70	50	140	100	70	60	0.07	0.07
Shovelnose Sturgeon	450	240	2,050	1,520	1,150	760	1.26	0.84
Pallid Sturgeon	120	60	360	230	0[a]	0[a]	0[a]	0[a]
Shortnose Gar	18	12	18	12	0	0	0	0
Longnose Gar	160	60	200	80	40	20	0.05	0.02
Goldeye	140	60	200	90	15	9	0.02	0.01
Skipjack Herring	160	50	500	280	340	270	0.37	0.3
Gizzard Shad	11	10	22	21	0	0	0	0
Bigmouth Buffalo	80	50	160	100	50	30	0.05	0.04
Black Buffalo	40	40	90	90	90	90	0.1	0.1
Smallmouth Buffalo	18	12	18	12	0	0	0	0
River Carpsucker	21	14	50	40	0	0	0	0
Carpsucker sp	12	12	25	24	25	24	0.03	0.03
White Sucker	8	7	8	7	0	0	0	0
Carp	1,570	200	5,680	1,320	2,120	390	2.31	0.52
Grass Carp	130	50	260	120	19	13	0.02	0.01
Silver Carp	20	19	40	40	0	0	0	0
Bighead Carp	8	8	17	16	17	16	0.02	0.02
Channel Catfish	1,700	220	4,460	660	2,920	500	3.18	0.69
Blue Catfish	1,080	280	8,430	5,810	10,860	8,270	11.84	9.15
Flathead Catfish	390	70	660	140	520	130	0.56	0.16
Yellow Bullhead	19	18	19	18	10	9	0.01	0.01
White Perch	8	7	24	22	0	0	0	0
White Bass	110	50	750	370	590	290	0.65	0.32
Striped Bass	8	7	24	23	8	7	0.01	0.01
Sauger	70	30	110	50	90	40	0.1	0.05

Table 17. Continued.

Species	Successful Parties	Standard Error	Total Catch	Standard Error	Total Harvest	Standard Error	Harvest Rate (per 100 Hrs)	Standard Error
Walleye	40	30	50	40	40	30	0.04	0.03
Largemouth Bass	18	12	40	30	0	0	0	0
Bluegill	50	20	620	560	600	560	0.66	0.62
Black Crappie	60	20	270	140	190	110	0.21	0.12
White Crappie	10	9	19	18	0	0	0	0
Freshwater Drum	1,060	260	2,710	770	570	190	0.62	0.22
Fishing/anything	30	30	40	40	40	40	0.05	0.04
Fishing Totals	--	--	**28,170**	**6,290**	**20,430**	**8,360**	**22.28**	**2.92**

[a] Tributaries included in this study were: the Mississippi River from the mouth of the Missouri River up to Lock and Dam 26; the lower Gasconade River to just above Gascony Village; the lower Osage River to above the Mari-Osa Access; the Lamine River up to the De Bourgmont Access; the lower portion of the Kansas (Kaw) River at Kaw Point Access in Kansas City, Kansas; the Platte River up to the Schimmel City Access; the Nishnabotna River up to Watson Access; and any usage of any other tributaries that river users reported as Missouri River Use.

[b] Species is listed as a federal endangered species under the Endangered Species Act, therefore, harvest of this species was not legal. Estimate reflects what the residences reported as being harvested.

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Table 18. Estimates of successful hunting parties, number of wildlife shot or trapped, number harvested and the harvest rate for different wildlife species taken by hunters on the Missouri River and its major tributaries[a] influenced by the Missouri River reporting as residences from St. Louis, Missouri to Gavins Point Dam near Yankton, South Dakota for the period from January 31, 2004 through January 28, 2005.

Species	Successful Parties	Standard Error	Total Shot/ Trapped	Standard Error	Total Harvest	Standard Error	Harvest Rate (per 100 Hrs)	Standard Error
White-tailed Deer	140	60	250	110	250	110	0.27	0.12
Squirrel	40	40	120	120	120	120	0.14	0.13
Raccoon	40	40	110	100	110	100	0.12	0.11
Crow	22	21	30	30	30	30	0.04	0.03
Pheasant	120	60	310	140	310	140	0.34	0.16
Mallard	220	80	500	200	500	200	0.54	0.23
Wigeon	11	10	70	60	70	60	0.07	0.07
Blue-Winged Teal	33	23	50	31	50	31	0.05	0.03
Green-Winged Teal	60	30	200	130	200	130	0.22	0.15
Gadwall	100	50	310	210	310	210	0.34	0.23
Wood Duck	21	20	21	20	21	20	0.02	0.02
Ring-Necked Duck	11	10	11	10	11	10	0.01	0.01
Greater Scaup	11	10	22	21	22	21	0.02	0.02
Canada Goose	50	40	130	120	130	120	0.15	0.13
Hunting Totals	--	--	**2,130**	**420**	**2,130**	**420**	**9.43**	**2.21**

[a] Tributaries included in this study were: the Mississippi River from the mouth of the Missouri River up to Lock and Dam 26; the lower Gasconade River to just above Gascony Village; the lower Osage River to above the Mari-Osa Access; the Lamine River up to the De Bourgmont Access; the lower portion of the Kansas (Kaw) River at Kaw Point Access in Kansas City, Kansas; the Platte River up to the Schimmel City Access; the Nishnabotna River up to Watson Access; and any usage of any other tributaries that river users reported as Missouri River Use.

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Table 19. Estimates of equipment and demographic information for Residences derived from the questionnaire sent at the end of the year to the respondent Residences group.

Which of the following do you own and use on the Missouri River? (check all that apply)		
	Proportion	Standard Error
Own and use a Motor Boat	0.702	0.0010
Own and use a kayak, canoe or non-motor boat	0	0
Do not own and use a boat	0.106	0.0005
Own a motor boat and a non-motor boat	0.193	0.0008

What race or ethnic group do you consider yourself? (Please check the one you primarily consider yourself.)		
	Proportion	Standard Error
White	0.978	0.00009
Black or African-American	0	0
Asian	0	0
American Indian	0.005495	0.00002
Other	0.016484	0.00008

Does anyone in your household have any of the following disabilities?		
	Proportion	Standard Error
Hearing Impaired		
Yes	0.185	0.0008
No	0.815	0.0008
Visually Impaired		
Yes	0.140	0.0006
No	0.860	0.0006
Learning Impaired		
Yes	0.043	0.0002
No	0.957	0.0002
Mobility Impaired		
Yes	0.157	0.0007
No	0.843	0.0007
Other Impairment	0.006	0.00002

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Table 20. Estimates of Missouri River use by members and guests of the St. Joseph Yacht Club and the 4F Flathead Club for the period of May 22, 2004 through January 28, 2005.

	Individual-Days			Hours			Average	
Activity	Estimate	Standard Error	Percent	Estimate	Standard Error	Percent	Length of Visits (Hrs)	Standard Error
Fishing								
Rod & Reel - Non-tournament	600	190	4.68	2,890	930	2.32	4.8	2.17
Other Methods - Non-tournament	110	70	0.86	720	570	0.58	6.5	6.65
Both Rod & Reel and Oth. Meth. - Non-tourn.	60	40	0.47	200	150	0.16	3.3	3.34
Rod & Reel - Tournament	220	140	1.71	1,680	1,080	1.35	7.6	6.91
Both Rod & Reel and Oth. Meth.- Tourn.	190	190	1.48	960	930	0.77	5.1	7.03
Snagging Paddlefish	40	40	0.31	190	190	0.15	4.8	6.72
Fishing Subtotal	**1,230**	**400**	**9.59**	**6,650**	**2,110**	**5.33**	**5.4**	**2.46**
Hunting								
Dove	40	40	0.31	110	110	0.09	2.8	3.89
Hunting Subtotal	**40**	**40**	**0.31**	**110**	**110**	**0.09**	**2.8**	**3.89**
Non-Consumptive Activities								
Camping, dept. site	410	220	3.20	2,960	1,650	2.37	7.2	5.59
Camping, other	2,220	710	17.30	43,550	14,630	34.89	19.6	9.10
Picnicking, dept. site	1,080	480	8.42	2,570	1,090	2.06	2.4	1.46
Picnicking, other	880	330	6.86	2,380	950	1.91	2.7	1.48
Swimming	510	290	3.98	2,100	1,490	1.68	4.1	3.74
Floating	900	290	7.01	2,180	690	1.75	2.4	1.09
Boating	4,340	950	33.83	21,840	4,780	17.50	5.0	1.56
Nature Study	40	30	0.31	40	30	0.03	1.0	1.06
Loafing	1,430	360	11.15	9,450	2,820	7.57	6.6	2.58
Sightseeing	130	80	1.01	290	170	0.23	2.2	1.90
Gathering Products	80	80	0.62	200	190	0.16	2.5	3.45
Target Shooting	410	380	3.20	1,210	1,140	0.97	3.0	3.90
Waterskiing	930	430	7.25	2,250	1,250	1.80	2.4	1.75

Table 20. Continued.

Activity	Individual-Days Estimate	Individual-Days Standard Error	Individual-Days Percent	Hours Estimate	Hours Standard Error	Hours Percent	Average Length of Visits (Hrs)	Standard Error
Jet Skiing	430	280	3.35	1,050	610	0.84	2.4	2.13
Sunbathing	210	110	1.64	980	560	0.79	4.7	3.62
Partying	2,560	880	19.95	13,910	5,320	11.14	5.4	2.79
Exercising	70	60	0.55	70	60	0.06	1.0	1.21
Tuning (or trying out) Boat and Motor	80	70	0.62	150	150	0.12	1.9	2.49
Lewis and Clark Event and Trail Tour	250	130	1.95	800	520	0.64	3.2	2.66
Photography	180	120	1.40	450	350	0.36	2.5	2.56
Sporting Activities	22	21	0.17	40	40	0.03	1.8	2.51
Non-Consumptive Activities Subtotal	**9,530**	**1,570**	**74.28**	**108,470**	**21,480**	**86.89**	**11.4**	**2.93**
Undefined Use	2,750	1,140	21.43	9,600	4,320	7.69	3.5	2.14
Work Trip	900	440	7.01	2,640	1,260	2.11	2.9	2.00
Overall Total	**12,830**	**2,230**	**100.00**	**124,830**	**24,120**	**100.00**	**9.7**	**2.53**

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Table 21. Estimates of successful parties, number of fish caught, number of fish harvested and the harvest rate for different fish species taken by members and their guests at St. Joseph Yacht Club and 4F Flathead Club for the period from May 22, 2004 through January 28, 2005.

Species	Successful Parties	Standard Error	Total Catch	Standard Error	Total Harvest	Standard Error	Harvest Rate (per 100 Hrs)	Standard Error
Shovelnose Sturgeon	50	30	330	270	270	260	4.12	1.31
Pallid Sturgeon	50	30	70	40	0[a]	0[a]	0.00[a]	0.00[a]
Longnose Gar	11	10	11	10	0	0	0.00	0.00
Goldeye	5	4	5	4	0	0	0.00	0.00
Carp	90	40	120	50	70	30	1.04	0.56
Channel Catfish	210	60	550	210	270	120	4.13	2.19
Blue Catfish	70	40	130	80	80	60	1.19	0.92
Flathead Catfish	240	80	640	260	340	130	5.11	2.55
Walleye	14	13	40	40	27	26	0.41	0.41
Freshwater Drum	90	50	300	210	90	60	1.37	0.96
Fishing Totals	--	--	**2200**	**490**	**1150**	**330**	**17.38**	**7.43**

[a] Species is listed as a federal endangered species under the Endangered Species Act, therefore, harvest of this species was not legal. Estimate reflects what the club members reported as being harvested.

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Table 22. Estimates concerning facilities at St. Joseph Yacht Club and 4F Flathead Club as derived from the questionnaire sent at the end of the year to respondent club members. Go to 61.

The place that you have along the Missouri River is a *(check one)*:		
	Proportion	Standard Error
Members Club	0.885	0.08019
Investment that is seldom visited	0.042	0.039064
Weekend/Vacation spot	0.073	0.070031
Summer residence	0	0
Primary year-round residence	0	0
Place that was sold to someone else during 2004	0	0
Place that was sold to someone else before 2004	0	0
I don't have a place along the Missouri River	0	0
Other	0	0

The place that you have along the Missouri River is *(check one)*:		
	Proportion	Standard Error
Owned by you	0.073	0.070031
Land owned by someone else, but improvements, including shelters, are owned by you	0.145	0.091693
Rented from someone else, including retal of buildings, trailer, or other improvements	0.042	0.039064
Owned by a group or club	0.438	0.1094
Owned entirely by someone else and they let you use it	0.073	0.070031
Other	0.229	0.105454

The place that you have along the Missouri River is a *(check one)*:		
	Proportion	Standard Error
House or cabin	0.084	0.052086
House trailer	0.073	0.070031
Area where you set up your RV, camping trailer, or tent	0635	0.092006
Other	0.209	0.065107

Does your place along the Missouri River have *(check one response for each)*:		
	Proportion	Standard Error
Sleeping facilities		
Yes	0.083	0.080429
No	0.917	0.080429
Indoor plumbing		
Yes	0.459	0.080419
No	0.541	0.080419
Electricity		
Yes	0.958	0.039064
No	0.042	0.039064
A boat dock		
Yes	0.958	0.039064
No	0.042	0.039064

Table 23. Estimates of equipment and demographic information for St. Joseph Yacht Club and 4F Flathead Club members at derived from the questionnaire sent at the end of the year to respondent club members.

Which of the following do you own and use on the Missouri River? (check all that apply)		
	Proportion	Standard Error
Own and use a Motor Boat	0.702	0.0010
Own and use a kayak, canoe or non-motor boat	0	0
Do not own and use a boat	0.106	0.0005
Own a motor boat and a non-motor boat	0.193	0.0008

What race or ethnic group do you consider yourself? (Please check the one you primarily consider yourself.)		
	Proportion	Standard Error
White	1.00	0
Black or African-American	0	0
Asian	0	0
American Indian	0	0
Other	0	0

Does anyone in your household have any of the following disabilities?		
	Proportion	Standard Error
Hearing Impaired		
Yes	0.130	0.0915
No	0.870	0.0915
Visually Impaired		
Yes	0.167	0.1038
No	0.834	0.1038
Learning Impaired		
Yes	0	0
No	1	0
Mobility Impaired		
Yes	0.145	0.0917
No	0.855	0.0917
Other Impairment	0	0

Return to page 61.

Table 24. Results from fishing tournaments reported for the Missouri River from the Mississippi River to Gavins Point Dam near Yankton, South Dakota during 2004.

Location	Date	Number of Boats	Number of People Fishing	Number of Hours for Tournament	Total Number of Angler-Hours Fished	Number of Fish Caught	Number of Fish Kept	Fish Type	
Council Bluffs, Iowa	May 1, 2004	34	66	9	594	9	0	Channel Catfish	
						1	0	Flathead Catfish	
						10	0	Total	
St. Charles, Missouri	June 12, 2004	12	23	9	207	10	0	Blue Catfish	
						21	0	Channel Catfish	
						7	0	Flathead Catfish	
						38	0	Total	
West Alton, Missouri	June 26, 2004	2	4	12	48	12	0	Blue Catfish	Missouri River Results
						12	0	Total	
		15	30	12	360	23	0	Blue Catfish	Mississippi River Results
						23	0	Total	
	Grand Total West Alton Tournament	17	34	12	408	35	0	Blue Catfish	
						35	0	Total	
Hermann, Missouri	June 26, 2004	7	13	7	91	4	0	Blue Catfish	
						5	0	Channel Catfish	
						8	0	Flathead Catfish	
						3	0	Drum	
						20	0	Total	

Table 24. Continued

Location	Date	Number of Boats	Number of People Fishing	Number of Hours for Tournament	Total Number of Angler-Hours Fished	Number of Fish Caught	Number of Fish Kept	Fish Type
White Cloud, Kansas	June 26, 2004	25	90	9	810	59.1 pounds	0	Blue Catfish
						199.4 pounds	0	Flathead Catfish
						285.5 pounds	0	Total
Weldon Springs, Missouri	June 27, 2004	9	18	7	126	6	0	Blue Catfish
						26	0	Channel Catfish
						3	0	Flathead Catfish
						35	0	Total
Jefferson City, Missouri	July 10, 2004	11	19	9	171	3	0	Blue Catfish
						61	0	Channel Catfish
						9	0	Flathead Catfish
						73	0	Total
Brownville, Nebraska	July 11, 2004	16	32	7	224	1	0	Blue Catfish
						9	0	Channel Catfish
						18	0	Flathead Catfish
						28	0	Total
Waverly, Missouri	July 17, 2004	42	83	15	1,245	43	0	Blue Catfish
						72	0	Channel Catfish
						53	0	Flathead Catfish
						168	0	Total

Table 24. Continued

Location	Date	Number of Boats	Number of People Fishing	Number of Hours for Tournament	Total Number of Angler-Hours Fished	Number of Fish Caught	Number of Fish Kept	Fish Type
Sioux City, Iowas	July 24, 2004	16	32	9	288	1	0	Blue Cat
						48	0	Channel Cat
						7	0	Flathead Cat
						56	0	Total
Weldon Springs, Missouri	July 25, 2004	8	16	7	112	5	3	Blue Catfish
						2	2	Channel Catfish
						3	3	Flathead Catfish
						10	8	Total
St. Joseph, Missouri	July 31, 2004	31	58	9	522	5	0	Blue Catfish
						22	0	Channel Catfish
						24	0	Flathead Catfish
						51	0	Total
Craig, Missouri	August 7, 2004	29	73	19	1,387	4	4	Blue Catfish
						49	8	Channel Catfish
						61	15	Flathead Catfish
						255	5	Carp
						369	32	Total
Nebraska City, Nebraska	August 15, 2004	18	35	8	280	2	0	Blue Catfish
						7	0	Channel Catfish
						10	0	Flathead Catfish
						19	0	Total
Sioux City, Iowa	August 22, 2004	58	116	8	928	146	0	Smallmouth and Largemouth Bass
						146	0	Total

Table 24. Continued

Location	Date	Number of Boats	Number of People Fishing	Number of Hours for Tournament	Total Number of Angler-Hours Fished	Number of Fish Caught	Number of Fish Kept	Fish Type	
Plattsmouth, Nebraska	August 29, 2004	11	22	8	176	8	0	Channel Catfish	
						6	0	Flathead Catfish	
						14	0	Total	
Falls City, Nebraska	September 19, 2004	15	28	8	224	2	0	Channel Catfish	
						15	0	Flathead Catfish	
						17	0	Total	
Brownville, Nebraska	September 26, 2004	13	25	8	200	1	0	Blue Catfish	
						2	0	Channel Catfish	
						13	0	Flathead Catfish	
						16	0	Total	
Totals for these:	18 Tournaments	357	753	168	7,993	120	7	Blue Catfish	59.1 pounds
						343	10	Channel Catfish	199.4 pounds
						238	18	Flathead Catfish	258.5 pounds
						146	0	Smallmouth and Largemouth Bass	
						3	0	Drum	
						255	5	Carp	
						1,105	40	Total	517.0 pounds

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Table 25. Location and dates of eight catfishing tournaments for which data were not available.

Location	Date
Wilton, Missouri	May 15, 2004
New Franklin, Missouri	June 19, 2004
Pilot Grove, Missouri	July 17, 2004
Wilton, Missouri	July 25, 2004
Jefferson City, Missouri	August 21, 2004
Wilton, Missouri	August 28, 2004
New Franklin, Missouri	September 11, 2004
Wilton, Missouri	September 25, 2004

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Table 26. Number of passengers by month on the River Star excursion boat using the Missouri River at Omaha, Nebraska during 2004.

Month	Number of Passengers
April	3,419
May	5,642
June	7,745
July	8,365
August	7,456
September	6,823
October	1,347
Total	**40,797**

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Table 27. Number of passengers by month on the "Spirit of Brownville" excursion boat using the Missouri River at Brownville, Nebraska during 2004.

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Month	Number of Passengers
May	733
June	628
July	1,270
August	1,173
September	765
October	994
Total	**5,563**

Table 28. Mean monthly temperature and precipitation for Missouri and Nebraska from January 2004 through January 2005 and their rankings among the last 111 years of records (National Climate Data Center, http://www.ncdc.noaa.gov/temp-and-precip/ranks.php).

Month	Mean Monthly Temperature in Degrees Fahrenheit	Ranking as the Warmest During the Last 111 Years	Ranking as the Coldest During the Last 111 Years	Mean Monthly Precipitation in Inches	Ranking as the Wettest During the Last 111 Years	Ranking as the Driest During the Last 111 Years
Missouri						
January '04	30	59	52	2.28	38	72
February	33.1	65	45	0.95	98	11
March	48.1	21	90	5.07	12	98
April	56.1	33	77	3.4	67	43
May	67	20	90	5.91	25	86
June	70.9	84	27	3.69	72	39
July	74.4	102	9	5.81	11	100
August	70.7	106	4	5.16	19	92
September	68.3	54	56	1.22	106	5
October	57.9	39	69	4.76	15	96
November	47.9	15	96	5.81	6	105
December	34.5	52	59	1.51	86	25
January '05	33.5	27	84	5.17	5	107
Nebraska						
January '04	23.6	52	59	0.51	45	66
February	26.1	62	49	0.79	41	69
March	43.1	5	106	2.12	14	97
April	50.5	27	84	1.76	69	42
May	60.3	33	77	3.04	49	60
June	65.2	98	11	2.89	80	31
July	71.8	95	16	4.03	23	88
August	68.3	107	4	1.46	99	11
September	66	20	89	3.52	13	98
October	52	41	67	1.17	63	47
November	38.9	27	84	1.57	18	93
December	30.6	15	95	0.1	107	4
January '05	33.5	27	84	0.57	38	73

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Figures

Figure 1. Study stretch of the Missouri River from the mouth near St. Louis, Missouri to Gavins Point Dam at Yankton, South Dakota. Return to page 2 or page 9.

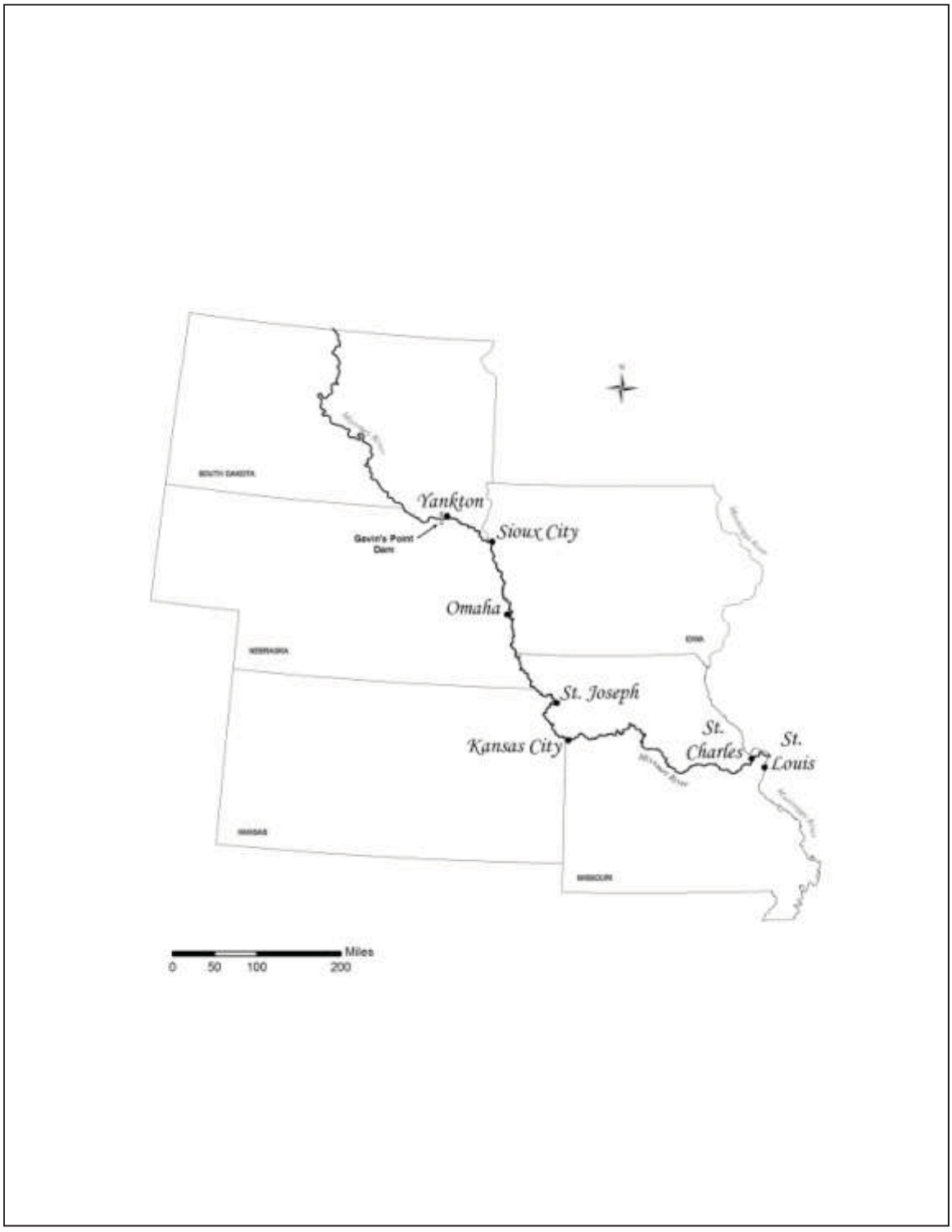

Figure 2. Mean Missouri River flow in cubic feet per second (CFS) in 4-week sampling intervals from January 3, 2004 through January 28, 2005. Flows (high and low flows displayed by vertical bars) are taken U. S. Geological Survey gauge stations on the Missouri River.

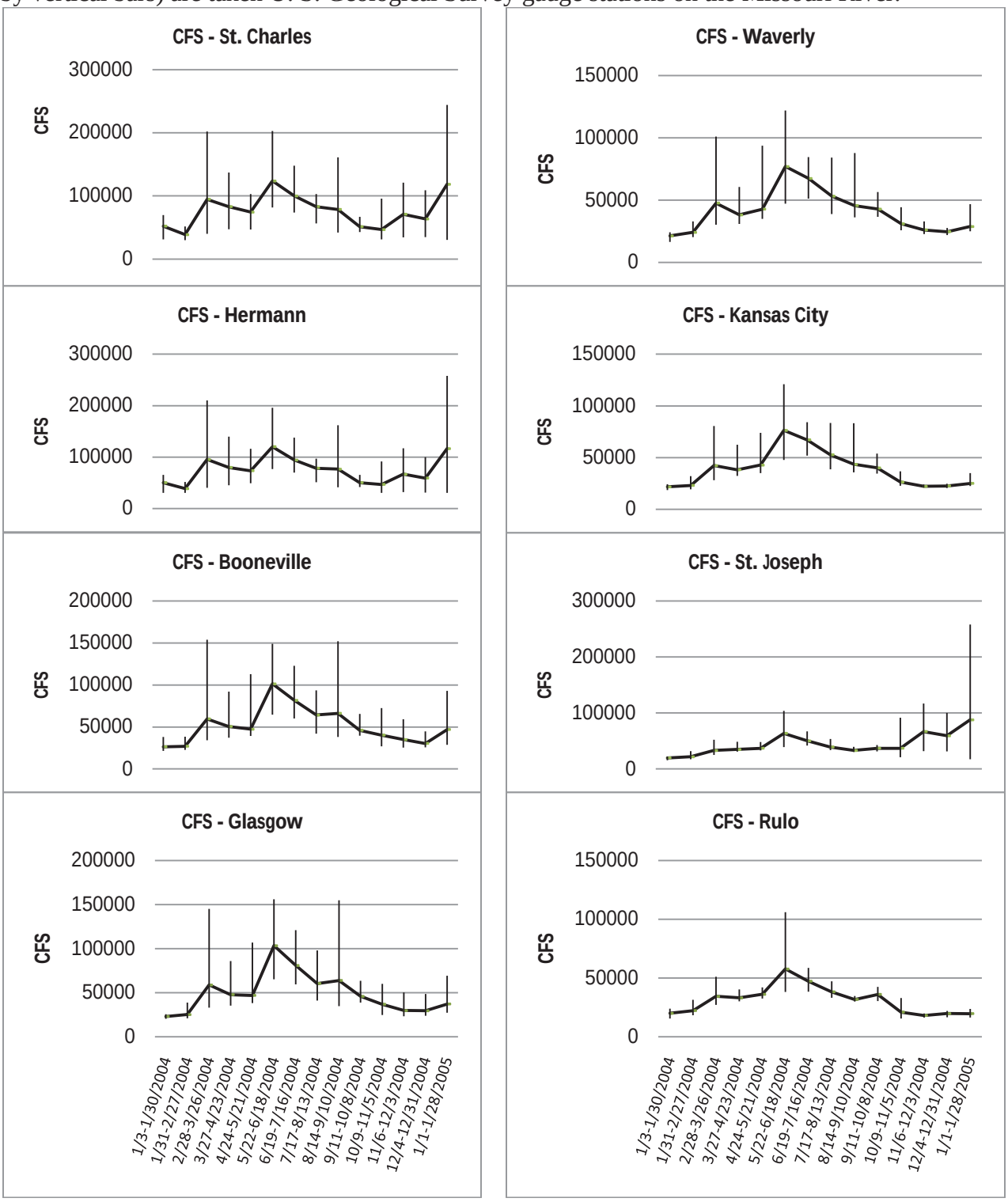

Figure 2. Continued.

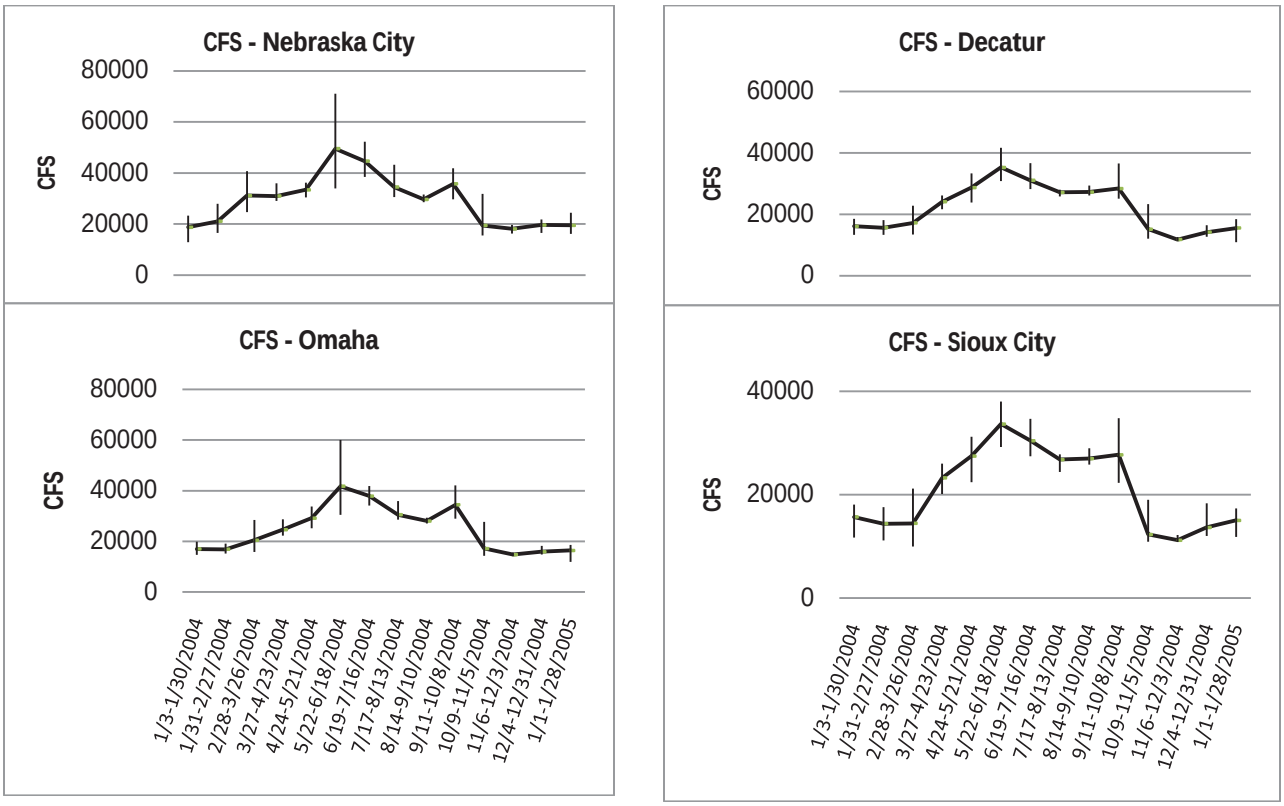

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Figure 3. An illustration of the construction of travel cost zones for one access (Maple Island, near St. Louis, MO). Darker shading indicates a higher proportion of the population making trips to the access, while the dollar figures represent the cost from each zone (zones being numbered from #1 through #44).

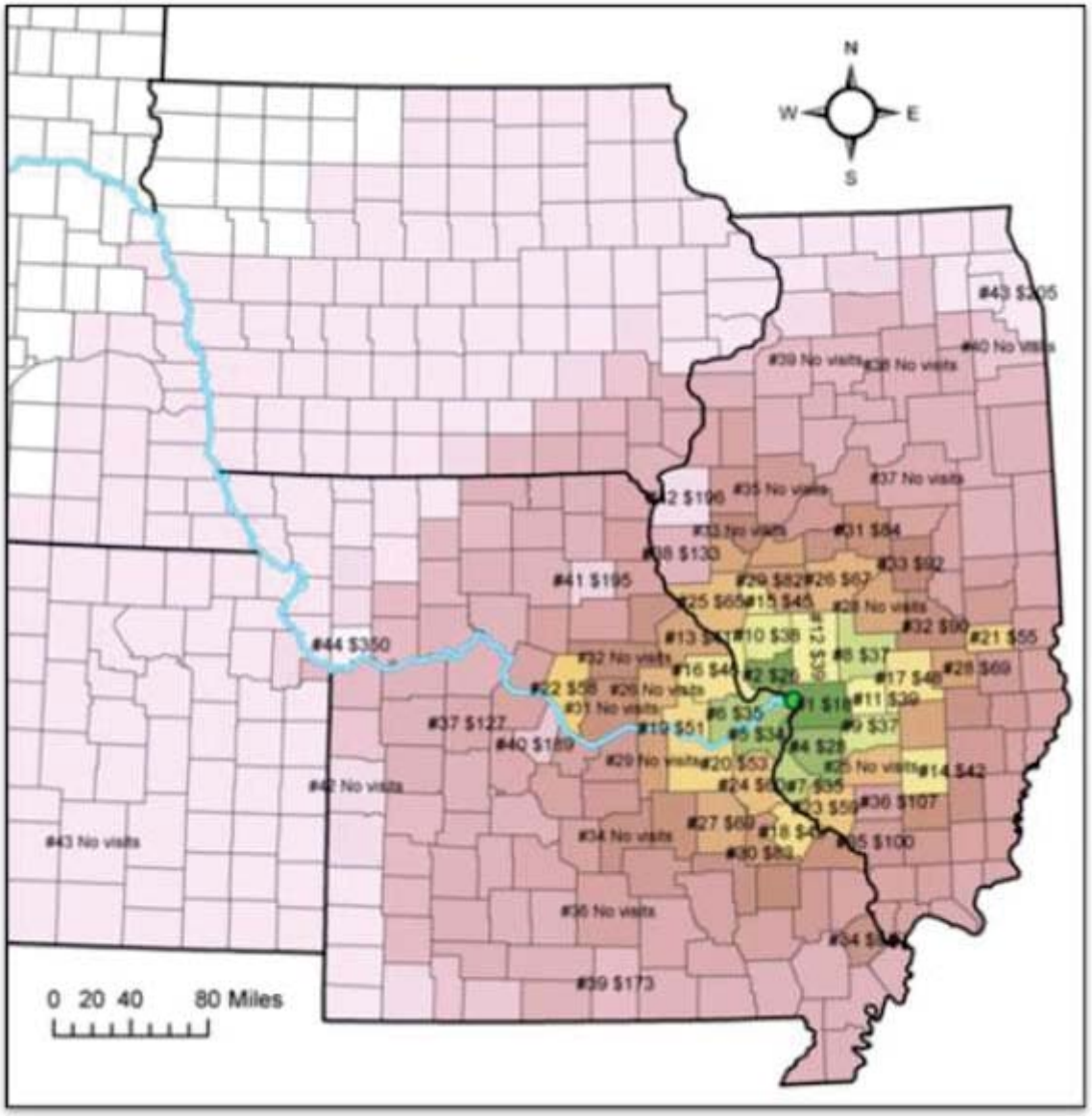

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Figure 4. Estimated number of individual-visits with 1 standard error of the estimate bars for each 4-week sampling interval of the Missouri River Public Use Assessment from St. Louis, Missouri to Gavins Point Dam near Yankton, South Dakota from January 3, 2004 through January 28, 2005.

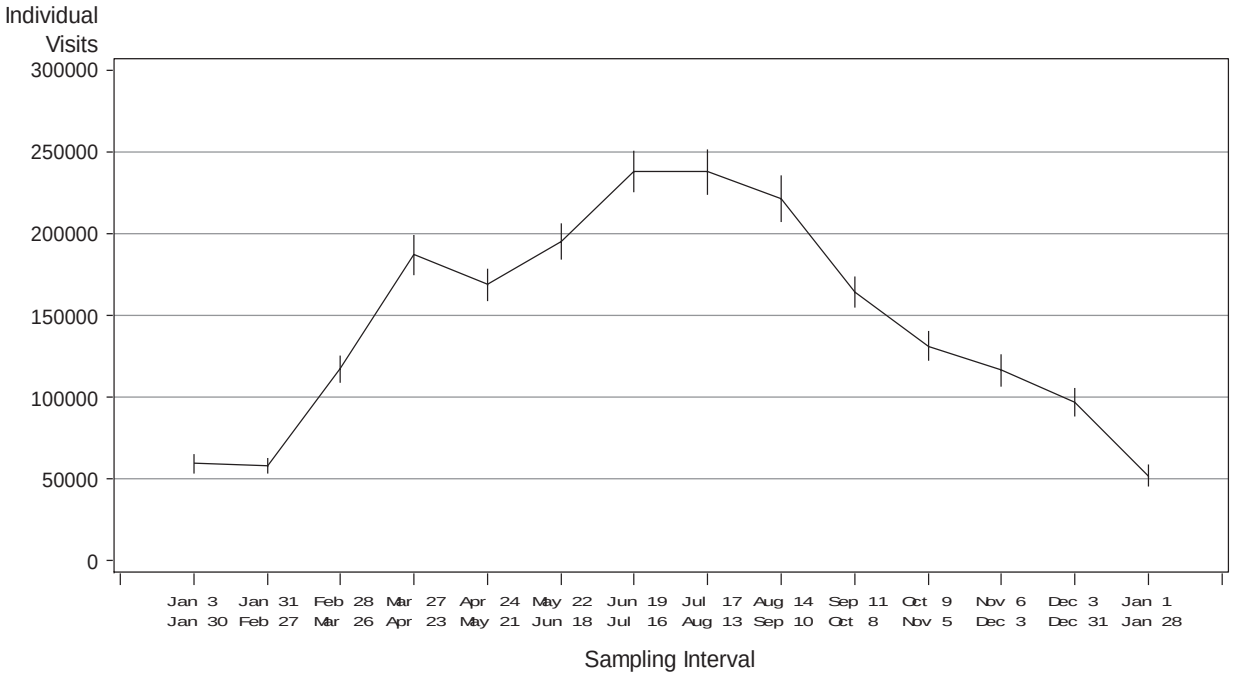

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Figure 5. Estimated number of individual-visits with 1 standard error of the estimate bars by weekend (Solid Line) and weekday (Dashed Line) strata for each 4-week sampling interval for Missouri River from St. Louis, Missouri to Gavins Point Dam near Yankton, South Dakota from January 3, 2004 through January 28, 2005.

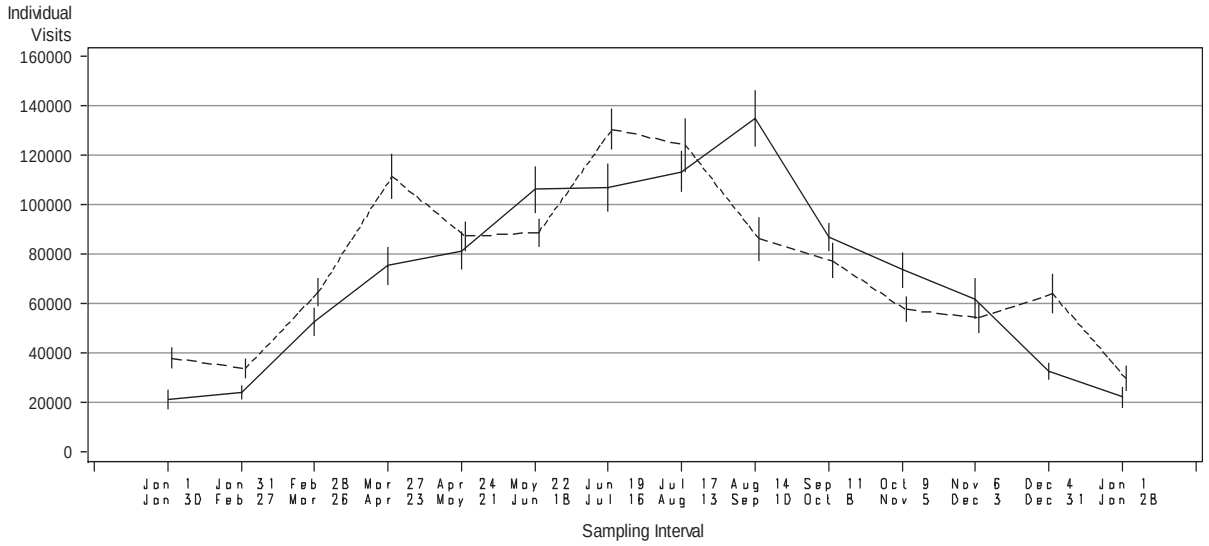

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Figure 6. Most frequent activities by 4-week sampling interval during the Missouri River Public Use Assessment from St. Louis, Missouri to Gavins Point Dam near Yankton, South Dakota from January 3, 2004 through January 28, 2005.

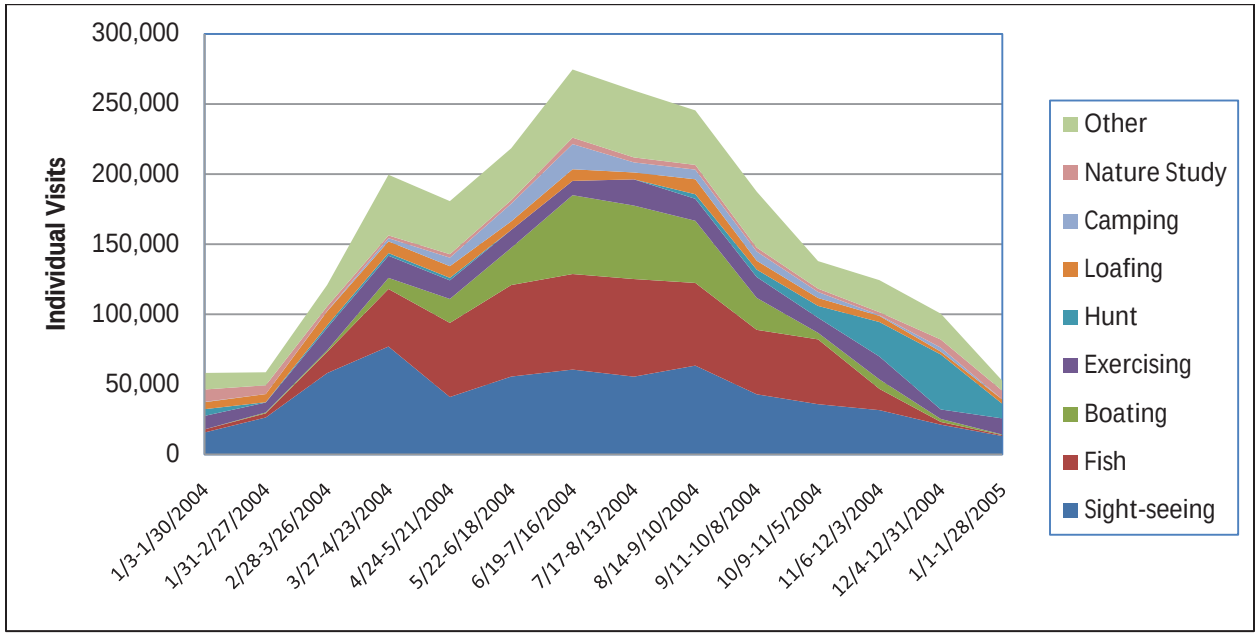

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Figure 7. Average (solid line) daily mean river flow in cubic feet per second (CFS) with maximum (+) and minimum (x) daily mean river flows for the Missouri River at four river gauges by 4-week sampling interval during the Missouri River Public Use Assessment. (It should be noted that the 4-week sampling intervals of January 2004 and January 2005 have been combined in estimating the mean, maximum and minimum flows for "Jan.") The four river gauges are located at (a) Sioux City, Iowa; (b) Nebraska City, Nebraska; (c) Kansas City, Missouri; and (d) Hermann, Missouri. The average daily mean river flows for these gauges are on top of areas representing the maximum and minimum river flows along with the 90th and 10th percentiles and 75th and 25th quartiles areas, and the median (dashed line) during the previous ten years. (Data were obtained from U. S. Geological Survey Surface-Water Data, http://waterdata.usgs.gov/nwis/sw.)

(a) Sioux City

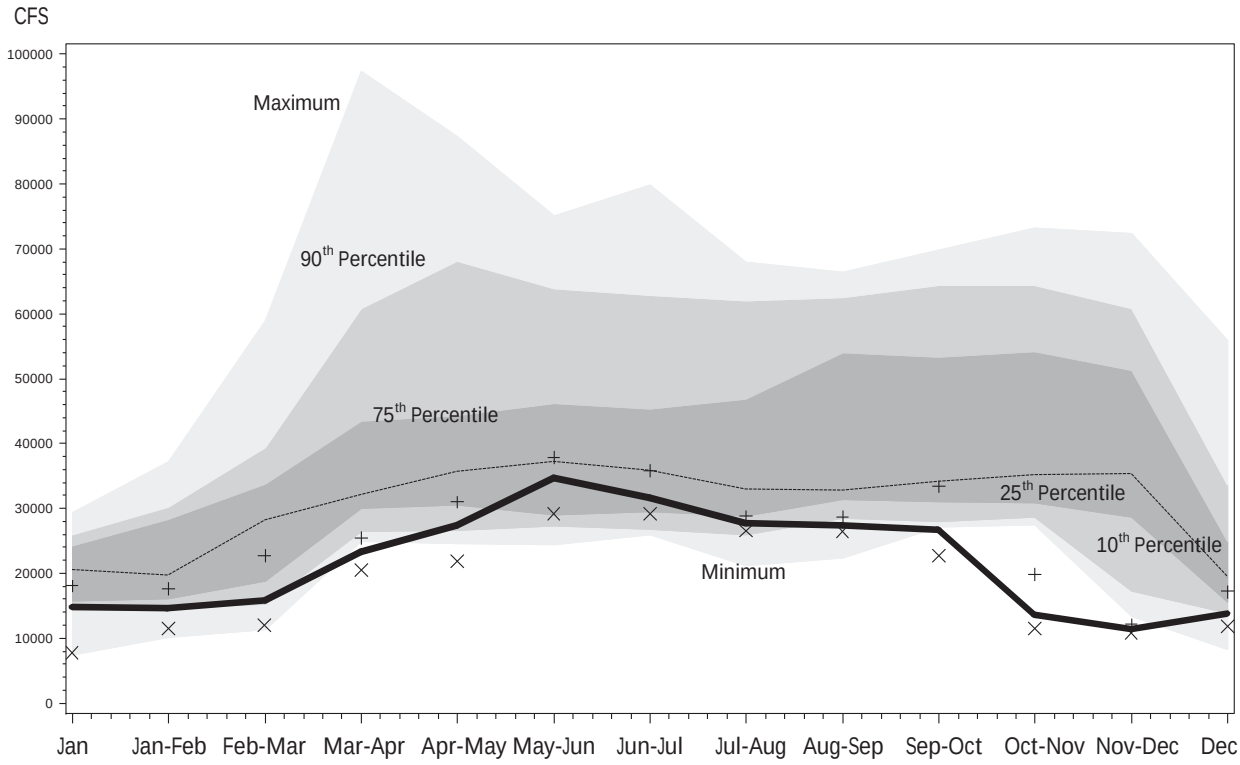
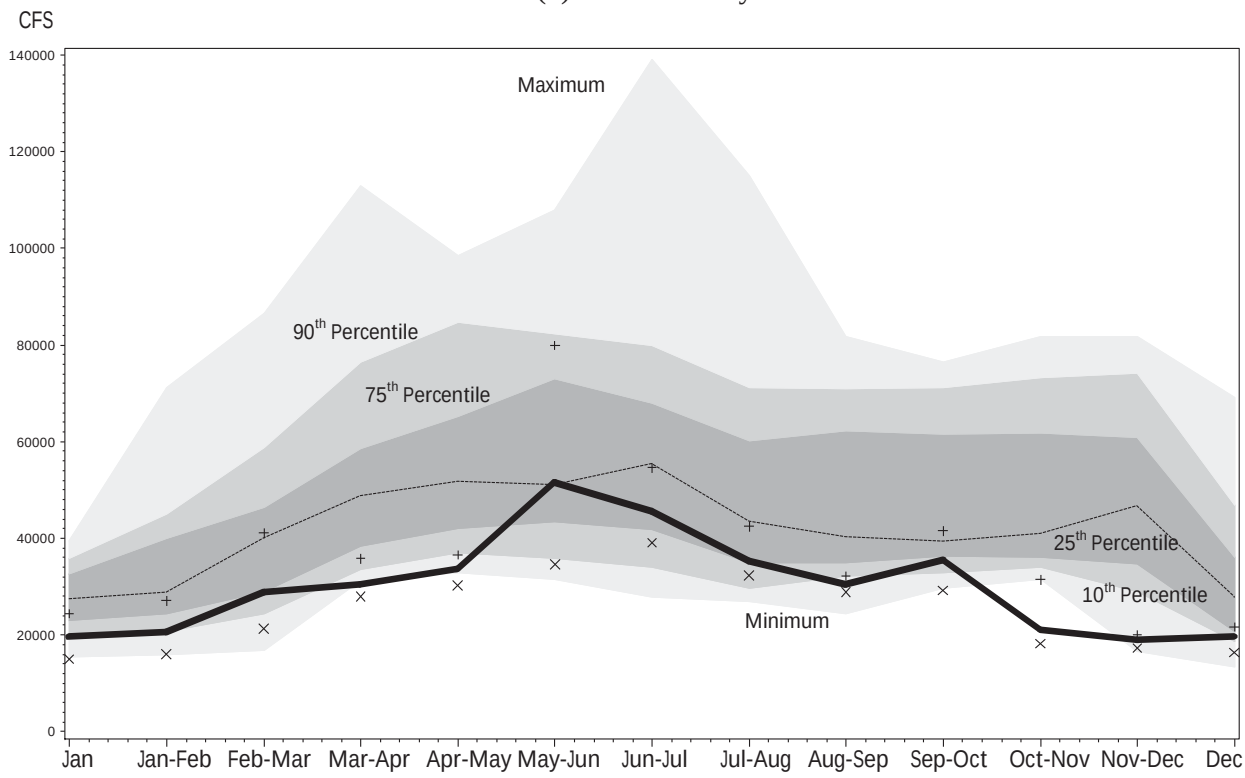


Figure 7. Continued.

(b) Nebraska City



(c) Kansas City

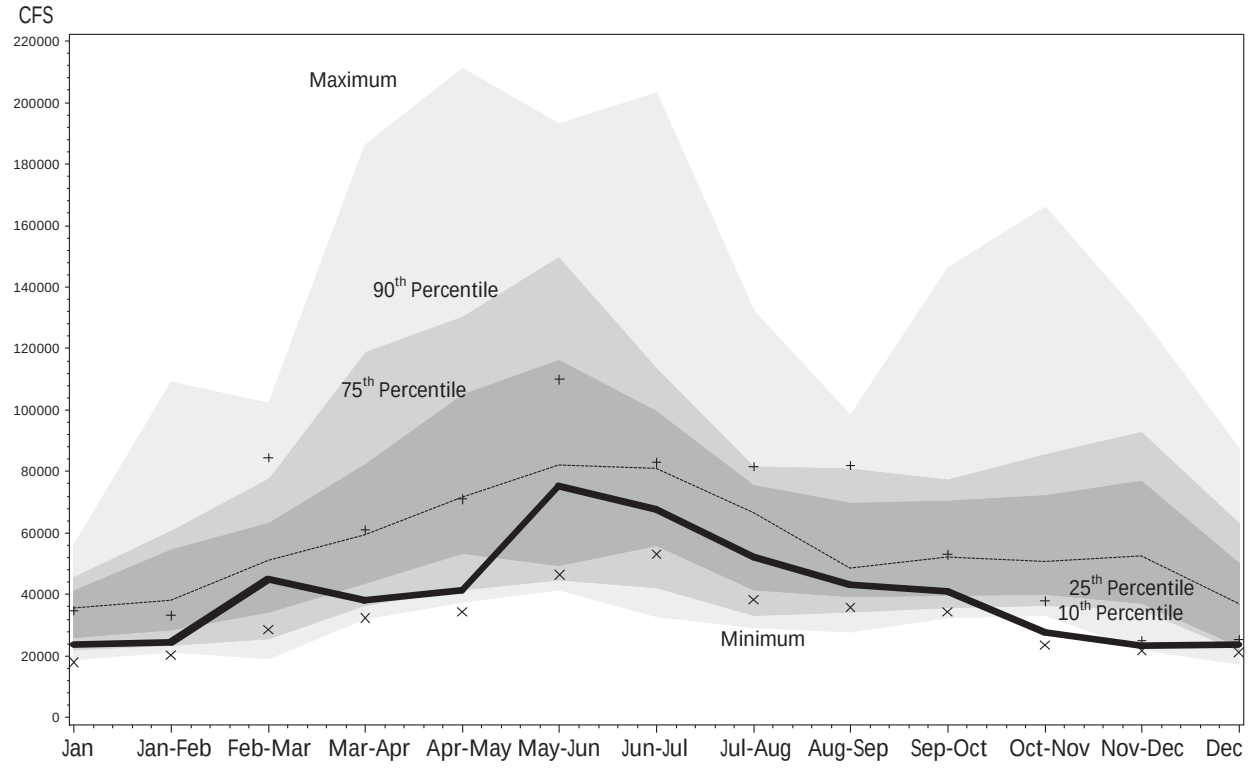
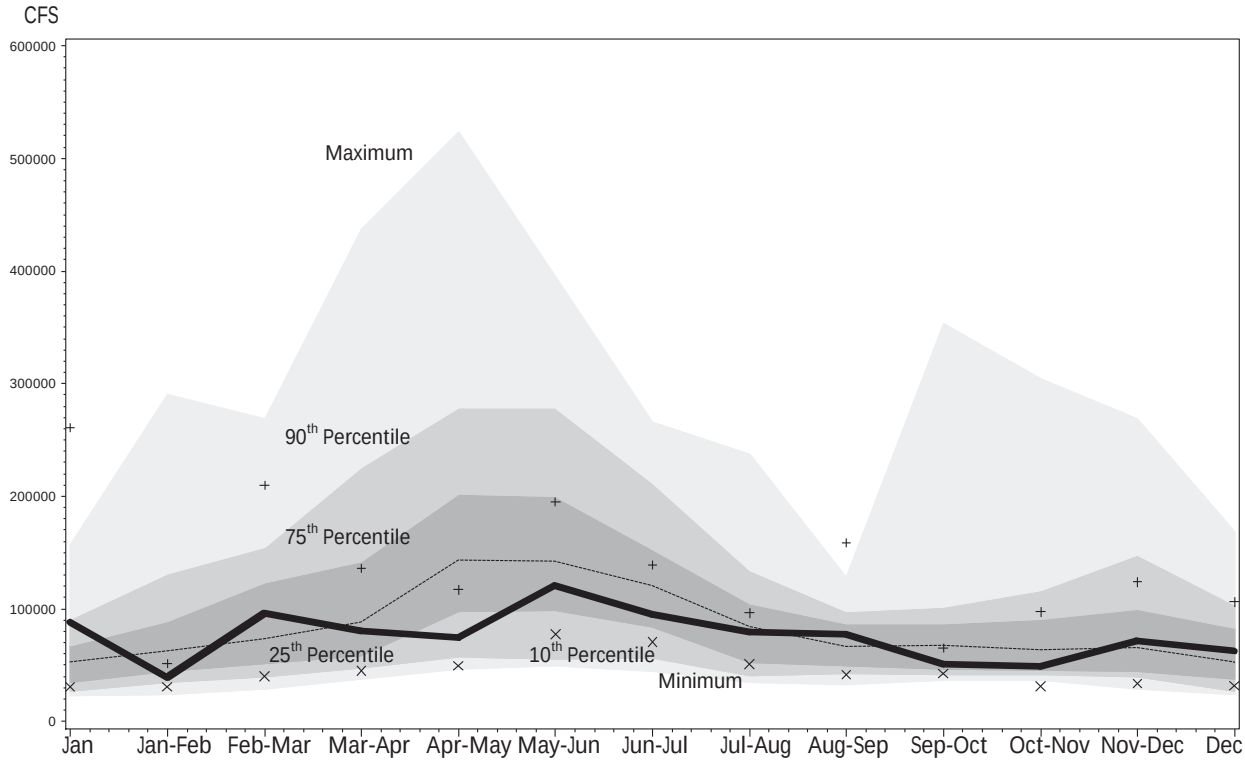


Figure 7. Continued.

(d) Hermann



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Appendices

Appendix A. Questions asked of users

Questions asked of departing Missouri River users by survey clerks during the 2004-2005 Missouri River Public Use Assessment where the access and bus-route methods were implemented.

Single Purpose/Multi-purpose Trip: Was your trip to this site today in combination with other activities not related to this visit (a Multi-purpose trip), or was coming to this site the primary focus of your trip (a Single-purpose trip)? For example, you might have originally planned your trip today primarily to visit a friend or family member and as an afterthought have come to this site (the multi-purpose trip), or was your original plan to visit the Missouri River and some other opportunity, such as visiting friends or family, presented itself as an afterthought (a single purpose trip)?
Where Did You Go: Did you go out on the Missouri River or along its bank? (Some accesses are away from the Missouri River, but the individual could have boated or hiked to the Missouri River)
First Missouri River Visit: If after January 3, 2004 – Is this your first visit to the Missouri River since January 3, 2004?
First Time Surveyed: Is this the first time that you have been interviewed by anyone along the Missouri River since January 3, 2004?
State Fishing, Hunting, or Trapping Permits: Do you possess a fishing, hunting or trapping permit that you purchased from the Missouri Department of Conservation (and/or the state that you are standing in)?
Activities Involved: What activities did you participate in along or on the Missouri River since your arrival on this trip or during last 24 hours, whichever is shorter? (Record the 3 activities the person spent the most time doing. They normally give their primary activity first to their least important activity. Order is not important.)
Time Spent Doing Each Activity: How much time did you spend at _(activity from list)__? (Ask for each activity determined in question above under **Activity**)
Species Caught and/or Harvested: If hunted or fished ask as appropriate: Did you harvest any (type of hunting done)? Did you catch any fish today, and if so, what kind were they?
Number Caught: How many (species caught) did you catch combining those both released and kept?
Number Kept or Harvested: How many of these did you keep?
Distance Travel 1-way: How many miles is it from here to your home?

Zip Code of Residence: What is your home zip code?
Age of Individual: What age category includes your age? (Show card)
Gender of Individual: What gender are you? (Show card – sometimes it is not obvious)
Race of Individual: What racial/ethnic category would you say that you are included in? (Show card)
Disability that Individual Has: What disability category best represents one that you might have? (Show card – may have to read categories if person cannot see the card)
Discrete Choice Question: The cost of travel frequently changes, with gasoline prices, boat fuel, hotels, restaurant meals, etc. often increasing. If the cost of this trip today had been $ _x_ higher, would you have made this trip? (After response to Choice question): This question concerning an additional cost to your trip today is only being asked to help economists in their efforts to estimate the economic value of the Missouri River.
Any Other Vehicles Currently Parked Along River: Does your party currently have a second vehicle parked at any other access along the Missouri River? (Ask of the same person as the Choice scenario, or the oldest person in the party.)
Completed Trip: Is the party leaving the Missouri River? (At Access sites, you should only have complete trip interviews with a Y) (Bus Routes – If a party is at the site but not leaving before you need to move to the next location, interview party for their socio-characteristic information and enter N in this location)
Thank you for your help, time and patience.

Return to page 17.

Appendix B. Survey form

Form used by the survey clerks to record responses from individuals interviewed when using the access and bus-route methods during the 2004-2005 Missouri River Public Use Assessment. Return to page 17.

MISSOURI RIVER PUBLIC USE ASSESSMENT - 2004-2005

Date: _____ Access Site: _____ Time of Day: _____ Type of Sample: _____ Sample #: _____ Sheet #: _____ Clerk: _____

ID	S/M Trip	Where Did You Go?	First MO River Visit/ First Survey		State Permit	Activity			Time			Harvest								Dist. 1-Way Travel	Zip Code	Age	Gender	Race	Disability	Choice		2nd Vehicle	Complete
						Major	No. 2	No. 3	Major	No. 2	No. 3	Spp 1	Cght/ Kept	Spp 2	Cght/ Kept	Spp 3	Cght/ Kept	Spp 4	Cght/ Kept							$	Yes/No		

Activities

Fishing
1. Rod and Reel – Non-Tournament
2. Other Methods – Non-Tournament
3. Both Rod and Reel and Other Methods – Non-Tourn.
4. Rod and Reel - Tournament
5. Other Methods - Tournament
6. Both Rod and Reel and Other Methods – Tourn.
7. Commercial
8.

Hunting
9. Deer, gun or muzzleloader
10. Deer, bow
11. Dove
12. Rabbit
13. Quail
14. Raccoon
15. Waterfowl
16. Fox
17. Predator
18. Crow
19. Squirrel
20. Turkey
21. Pheasant
22.

Miscellaneous
23. Frogging
24. Trapping
25. Camping, Dept. Site
26. Camping, other
27. Picnicking, Dept. Site
28. Picnicking, other
29. Swimming
30. Floating
31. Boating
32. Canoeing
33. Nature Study (birding, etc.)
34. Loafing
35. Sight-seeing
36. Cottage use
37. Off-road vehicle
38. Gathering products
39. Collecting bait
40. Target shooting
41. Undefined use
42. Rappelling
43. Caving
44. Water skiing
45. Biking
46. Jet skiing
47. Sunbathing
48. Partying
49. Hiking
50. Exercising (walking or running)
51. Preparing for hunting season
52. Tuning (or trying out) Boat and Motor
53. Lewis and Clark Event
54. Work trip
55. Photography
56. Playground/Telephone/Restroom
57. Sporting Activities
58.

Harvest

Fish

Paddlefish	007
Lake Sturgeon	010
Shovelnose sturgeon	011
Pallid sturgeon	012
Shortnose gar	016
Longnose gar	018
Goldeye	023
Skipjack herring	024
Bigmouth buffalo	035
Black buffalo	036
Smallmouth buffalo	037
Quillback	040
River carpsucker	041
Blue sucker	047
White sucker	049
Carp	070
Grass carp	077
Bighead carp	079
Silver carp	078
Shorthead redhorse	041
Channel catfish	230
Blue catfish	232
Black bullhead	235
Yellow bullhead	240
Flathead catfish	245
Northern pike	264
Eel	270
White bass	310
Striped bass hybrid	311
Yellow bass	312
Striped bass	313
Sauger	316
Walleye	318
Largemouth bass	406
Green sunfish	412
Bluegill	424
Black crappie	430
White crappie	431
Freshwater drum	450
White perch	309

Wildlife

White-tailed deer	601
Squirrel	602
Rabbit	603
Raccoon	604
Beaver	605
Muskrat	606
Otter	607
Mink	608
Bobcat	609
Gray fox	610
Red fox	611
Opossum	612
Coyote	613
Skunk	614
Badger	615
Mourning dove	616
Bobwhite quail	617
Crow	618
Turkey	619
Pheasant	620
Mallard	630
Wigeon	631
Blue-winged teal	632
Green-winged teal	633
Pintail	634
Shoveler	635
Gadwall	636
Wood duck	637
Redhead	638
Canvasback	639
Ring-necked duck	640
Greater Scaup	641
Lesser Scaup	642
Goldeneye	643
Bufflehead	644
Hooded Merganser	645
Red-breasted merganser	646
Common merganser	647
Ruddy duck	648
Other ducks	649
Canada goose	650
Snow goose	651
Ross' goose	652
White-fronted goose	653
Coot	654
Rail	655
Snipe	656
Woodcock	657
	698
	699
	700
	701

Vehicle Exits Not Interviewed: _____

Comments:

Appendix C. Socio-demographic characteristic codes

Socio-demographic characteristic codes used by the individual being interviewed by a survey clerk at public accesses and areas during the 2004-2005 Missouri River Public Use Assessment.

Return to page 17.

MISSOURI RIVER PUBLIC USE ASSESSMENT

Age Categories in Years

1.) 0-11
2.) 12-15
3.) 16-17
4.) 18-24
5.) 25-34
6.) 35-44
7.) 45-64
8.) 65 or over

Race or Ethnic Group

1.) White
2.) Black or African-American
3.) Hispanic or Latino
4.) Asian – (Chinese, Asian Indian, Japanese, Korean, Filipino, Vietnamese)
5.) American Indian – (Alaska native, Native Hawaiian)
6.) Other

Gender

1.) Male
2.) Female

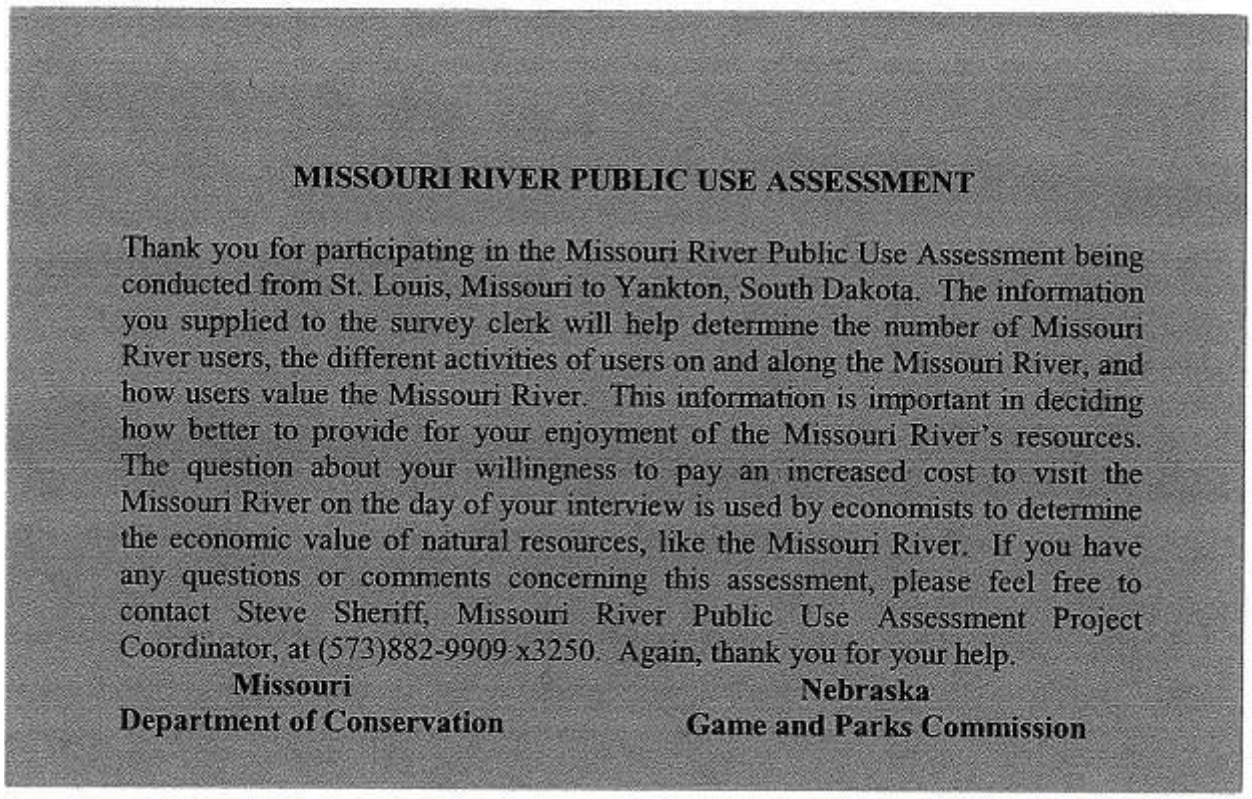
Disability

1.) None
2.) Hearing Impaired
3.) Visually Impaired
4.) Learning Impaired
5.) Mobility Impaired
6.) Other

Appendix D. Thank you card

An example of the thank-you card given to the departing party after they had been interviewed by a survey clerk using the access or bus-route methods during the 2004-2005 Missouri River Public Use Assessment.

Return to page 17.



MISSOURI RIVER PUBLIC USE ASSESSMENT

Thank you for participating in the Missouri River Public Use Assessment being conducted from St. Louis, Missouri to Yankton, South Dakota. The information you supplied to the survey clerk will help determine the number of Missouri River users, the different activities of users on and along the Missouri River, and how users value the Missouri River. This information is important in deciding how better to provide for your enjoyment of the Missouri River's resources. The question about your willingness to pay an increased cost to visit the Missouri River on the day of your interview is used by economists to determine the economic value of natural resources, like the Missouri River. If you have any questions or comments concerning this assessment, please feel free to contact Steve Sheriff, Missouri River Public Use Assessment Project Coordinator, at (573)882-9909 x3250. Again, thank you for your help.

Missouri Department of Conservation

Nebraska Game and Parks Commission

Appendix E. Summary form – access method

Summary form used by the 2004-2005 Missouri River Public Use Assessment survey clerks using the access method to record information about the number of vehicles and weather conditions during the sampling period. This form was not used at the seven areas where the access method was used. Return to page 18.

MISSOURI RIVER PUBLIC USE ASSESSMENT
ACCESS SITE SUMMARY
2004-2005

Access Site Name: _____ Date: _____

Access Site Number: _____ Sample Period: AM PM

Time Started: _____ Time Ended: _____

Clerk(s): _____

Sample Type Used: Regular Systematic

Number of Vehicles at Access Site at Start Time: _____

Number of Vehicles at Access Site at End Time: _____

Number of Exiting Vehicles Not Interviewed: _____

Number of Vehicles Interviewed: _____

Number of Survey Sheets Reported: _____

Weather Information (circle):

Cloud Cover: Clear Few clouds Partly Sunny Cloudy

Precipitation: None Some moisture fell Moisture fell all sample period

(Type: Rain Snow) (Degree: Heavy Moderate Light)

Temperature: Below Freezing Freezing to 50F 50F-70F 70F-90F 90F +

Comments:

Appendix F. Summary form – areas

Summary form used by the survey clerks for recording information about the number of vehicles and weather conditions during the sampling period when conducting interviews at one of the seven areas where public use was estimated during the 2004-2005 Missouri River Public Use Assessment. Return to page 18.

MISSOURI RIVER PUBLIC USE ASSESSMENT
AREA SUMMARY
2004-2005

Area Name: _____ Date: _____

Area Site Number: _____ Sample Period: AM PM

Time Started: _____ Time Ended: _____

Clerk(s): _____

Sample Type Used: Regular Systematic

Number of Exiting Vehicles Not Interviewed: _____

Number of Vehicles Interviewed: _____

Number of Survey Sheets Reported: _____

Weather Information (circle):

Cloud Cover: Clear Few clouds Partly Sunny Cloudy

Precipitation: None Some moisture fell Moisture fell all sample period

(Type: Rain Snow) (Degree: Heavy Moderate Light)

Temperature: Below Freezing Freezing to 50F 50F-70F 70F-90F 90F +

Comments:

Appendix G. Summary form – bus-route

Summary form used by the 2004-2005 Missouri River Public Use Assessment survey clerks using the bus-route method to record information about parties present at accesses and weather conditions during the sampling period. Return to page 19.

MISSOURI RIVER PUBLIC USE ASSESSMENT – BUS ROUTE SURVEY
2004-2005 Vehicle Count Form

Date: _____ Bus Route Name: _____

Time: AM/PM (Circle One) Upstream/Downstream (Circle One)

Clerk: _____ Page _____ of _____

Access Point	Time		ID	Known Vehicle					Unknown Vehicle				
	Start	End		License Plate #	Arrival Time	Depart. Time	User Y/N	Total Min.	License Plate #	Arrival Time	Depart. Time	User Y/N	Total Min.

Number of Vehicle Count Forms for sample period: _____ Number of Survey Sheets Reported: _____

Weather Information (circle):

Cloud Cover: Clear Few clouds Partly Sunny Cloudy

Precipitation: None Some moisture fell Moisture fell all sample period

(Type: Rain Snow) (Degree: Heavy Moderate Light)

Temperature: Below Freezing Freezing to 50F 50F-70F 70F-90F 90F +

Notes:

Appendix H. Monthly Diary

An example of a monthly diary sent to club members or residences that had access to the Missouri River or its major tributaries from private land where the general public did not have access during the 2004-2005 Missouri River Public Use Assessment.

Return to page 43 or page 44.

MISSOURI RIVER PUBLIC USE ASSESSMENT - 2004-2005 – ACTIVITY DIARY

Dates: Mar 27 – Apr 23, 2004 Were you at your river residence during this time period (circle one)? YES → Please complete form and return when you receive your next Activity Diary.
NO → Please keep form and return when you receive your next Activity Diary.

		Main Activity			Activity 2			Activity 3			Harvest								
Day	Total in Party	Activity	Time Spent	Number in Group	Activity	Time Spent	Number in Group	Activity	Time Spent	Number in Group	Species 1	Number Caught	Number Kept	Species 2	Number Caught	Number Kept	Species 3	Number Caught	Number Kept
Example	4	1	3hrs	3	31	2hrs	4	47	1hr	2	070	11	0	230	5	2			
Saturday Mar 27																			
Sunday Mar 28																			
Monday Mar 29																			
Tuesday Mar 30																			
Wednesday Mar 31																			
Thursday Apr 1																			
Friday Apr 2																			
Saturday Apr 3																			
Sunday Apr 4																			
Monday Apr 5																			
Tuesday Apr 6																			
Wednesday Apr 7																			
Thursday Apr 8																			
Friday Apr 9																			

NOTE: Please turn over to complete for April 10th-April 23rd, 2004.

Day	Total in Party	Main Activity			Activity 2			Activity 3			Harvest								
		Activity	Time Spent	Number in Group	Activity	Time Spent	Number in Group	Activity	Time Spent	Number in Group	Species 1	Number Caught	Number Kept	Species 2	Number Caught	Number Kept	Species 3	Number Caught	Number Kept
Example	4	1	3hrs	3	31	2hrs	4	47	1hr	2	070	11	0	230	5	2			
Saturday Apr 10																			
Sunday Apr 11																			
Monday Apr 12																			
Tuesday Apr 13																			
Wednesday Apr 14																			
Thursday Apr 15																			
Friday Apr 16																			
Saturday Apr 17																			
Sunday Apr 18																			
Monday Apr 19																			
Tuesday Apr 20																			
Wednesday Apr 21																			
Thursday Apr 22																			
Friday Apr 23																			

Questions? Call us toll-free at 1-866-577-8611

Appendix I. List of activity and species codes

List of activity and species codes used by the recipients of diaries during the 2004-2005 Missouri River Public Use Assessment. Return to page 44.

MISSOURI RIVER PUBLIC USE ASSESSMENT
2004-2005 ACTIVITIES AND SPECIES CODES

ACTIVITIES

Fishing

1. Rod and Reel – Non-Tournament
2. Other Methods – Non-Tournament
3. Both Rod and Reel and Other Methods – Non-Tourn.
4. Rod and Reel - Tournament
5. Other Methods - Tournament
6. Both Rod and Reel and Other Methods – Tourn.
7. Commercial

Hunting

9. Deer, gun or muzzleloader
10. Deer, bow
11. Dove
12. Rabbit
13. Quail
14. Raccoon
15. Waterfowl
16. Fox
17. Predator (Coyote, bobcat, fox, etc.)
18. Crow
19. Squirrel
20. Turkey
21. Pheasant

Miscellaneous

23. Frogging
24. Trapping
25. Camping, Dept. Site
26. Camping, other
27. Picnicking, Dept. Site
28. Picnicking, other
29. Swimming
30. Floating
31. Boating
32. Canoeing
33. Nature Study (birding, etc.)
34. Loafing
35. Sight-seeing
36. Cottage use
37. Off-road vehicle
38. Gathering products
39. Collecting bait
40. Target shooting
41. Undefined use
42. Rappelling
43. Caving
44. Water skiing
45. Biking
46. Jet skiing
47. Sunbathing
48. Partying
49. Hiking
50. Exercising (walking or running)
51. Preparing for hunting season
52. Tuning (or trying out) Boat and Motor
53. Lewis and Clark Event
54. Work trip
55. Photography
56. Playground/Telephone/Restroom
57. Sporting Activities

HARVEST Codes on reverse side

Questions concerning your activity diary or these lists, please call toll-free: 866-577-8611

HARVEST - Species Codes

Fish	
Paddlefish	007
Lake Sturgeon	010
Shovelnose sturgeon	011
Pallid sturgeon	012
Shortnose gar	016
Longnose gar	018
Goldeye	023
Skipjack herring	024
Bigmouth buffalo	035
Black buffalo	036
Smallmouth buffalo	037
Quillback	040
River carpsucker	041
Blue sucker	047
White sucker	049
Carp	070
Grass carp	077
Bighead carp	079
Silver carp	078
Shorthead redhorse	061
Channel catfish	230
Blue catfish	232
Black bullhead	235
Yellow bullhead	240
Flathead catfish	245
Northern pike	264
Eel	270
White bass	310
Striped bass hybrid	311
Yellow bass	312
Striped bass	313
Sauger	316
Walleye	318
Largemouth bass	406
Green sunfish	412
Bluegill	424
Black crappie	430
White crappie	431
Freshwater drum	450
White perch	309

Wildlife	
White-tailed deer	601
Squirrel	602
Rabbit	603
Raccoon	604
Beaver	605
Muskrat	606
Otter	607
Mink	608
Bobcat	609
Gray fox	610
Red fox	611
Opossum	612
Coyote	613
Skunk	614
Badger	615
Mourning dove	616
Bobwhite quail	617
Crow	618
Turkey	619
Pheasant	620
Mallard	630
Wigeon	631
Blue-winged teal	632
Green-winged teal	633
Pintail	634
Shoveler	635
Gadwall	636
Wood duck	637
Redhead	638
Canvasback	639
Ring-necked duck	640
Greater Scaup	641
Lesser Scaup	642
Goldeneye	643
Bufflehead	644
Hooded Merganser	645
Red-breasted merganser	646
Common merganser	647
Ruddy duck	648
Other ducks	649
Canada goose	650
Snow goose	651
Ross' goose	652
White-fronted goose	653
Coot	654
Rail	655
Snipe	656
Woodcock	657

Appendix J. Letter of transmittal

Letter of transmittal sent to recipients of diaries who had been previously contacted and agreed to cooperate in this study during the 2004-2005 Missouri Public Use Assessment. Go to pg. 44.

MISSOURI DEPARTMENT OF CONSERVATION

Headquarters

2901 West Truman Boulevard, P.O. Box 180, Jefferson City, Missouri 65102-0180
Telephone: 573/751-4115 ▲ Missouri Relay Center: 1-800-735-2966 (TDD)

JOHN D. HOSKINS, Director

REPLY TO: Resource Science Center
1110 S. College Ave.
Columbia, MO 65201
Telephone: 1-866-577-8611
Fax: 573-882-4517

Dear Missouri River User:

Thank you for agreeing to participate in this study of the types of recreation that people participate in along the Missouri River. The Missouri River plays an important role in the lives of those who live near it. **Because you have the opportunity to experience the Missouri River up close, your input into this study is very important.** You are one of a small number of people being asked to provide information about your river-related recreation activities, such as hunting, fishing, and boating. Without your help, this study about the use of the Missouri River cannot succeed.

With this letter, you will find a blue sheet that has a list of activities, as well as lists of wildlife and fish species. Also enclosed is an activity diary we are asking you to complete about your river-related recreation activities. About every 4 weeks, you will get another activity diary in the mail, as well as a postage-paid envelope to return the activity diary you just completed. As you can see on the activity diary, there is a line, or row, for each day. For each day, please fill in the total number of people at your river residence that day. We would also like you to tell us the number of people who did each of the three main activities. Please do not be alarmed by the table! Once you complete it for a day or two, it is very easy to do. An example is given on the activity diary and explained below to help you. Many river residents keep the activity diary posted on their refrigerator. Some people find it easier to do the activity diary every day, and others do it every few days instead. Whichever works for you is fine.

In the example, the total number in the party was 4 people at your residence. The main activity participated in was fishing with a rod and reel. Looking at the blue sheet, you can see that this activity is listed as number 1, so a "1" is written in the box on the activity diary. The amount of time spent fishing was 3 hours, so "3 hours" is written in the next box. Three of the 4 people in the party were fishing, so a "3" is written in the next box for this example. The same pattern is followed for boating (activity 31, 2 hours, 4 people), and for sunbathing (activity 47, 1 hour, 2 people). Also filled in are the boxes about the fish harvested. While fishing, members of the party caught 11 carp (the blue sheet tells you this is species 070), but they did not keep any. There were 5 channel catfish caught (species 230), 2 of which were kept. Keep the same kind of list for each day, depending on what your party does that day. If you forget to fill out the activity

COMMISSION

STEPHEN C. BRADFORD, Cape Girardeau · ANITA B. GORMAN, Kansas City · CYNTHIA METCALFE, St. Louis · LOWELL MOHLER, Jefferson City

diary for a few days, just give us your best estimate. **After 2 weeks, turn the activity diary over and do the next 2 weeks the same way.**

If you access the Missouri River away from your residence, such as at a public ramp, marina, or park, please **do not** include this trip to the Missouri River on your activity diary. We are collecting this information in person, using survey clerks and special sampling methods. If a survey clerk is present at the public access site when you visit, please provide the clerk with the information asked. This information will represent your trip to the site that day, as well as other trips that you and others might make when the survey clerk is not present. Again, on your activity diary please only record those activities that you and your friends do on your land or residence along the Missouri River.

How about those weeks or months when you do not use your river residence? If you did not use your residence at all during the 4 weeks, just circle the word "NO" that appears on the top of the activity diary. Keep the activity diary in a safe place, and when the next postage-paid envelope arrives, mail it back to us. **It is very important that the activity diary be returned even for those months that you did not use your river residence.**

Many people have told us it is fun being a part of this study, and we really hope you will enjoy it, too. Please feel free to contact us, **toll-free**, at 1-866-577-8611 if you have any questions. If you prefer, you can email me your questions at Steve.Sheriff@mdc.mo.gov. We can't do this project without your help!

Sincerely,

Steven L. Sheriff
Project Coordinator
Missouri River Public Use Assessment

Appendix K. Letter of introduction

Letter of introduction sent to recipients of diaries who had not been previously contacted concerning their cooperation in the 2004-2005 Missouri River Public Use Assessment.

Return to page 44 or page 58.

MISSOURI DEPARTMENT OF CONSERVATION

Headquarters

2901 West Truman Boulevard, P.O. Box 180, Jefferson City, Missouri 65102-0180
Telephone: 573/751-4115 ▲ Missouri Relay Center: 1-800-735-2966 (TDD)

JOHN D. HOSKINS, Director

REPLY TO: Resource Science Center
1110 S. College Ave.
Columbia, MO 65201
Telephone: 1-866-577-8611
Fax: 573-882-4517

Dear Missouri River User:

The Missouri River plays an important role in the lives of all those who live near it. The Missouri Department of Conservation, along with the Nebraska Game and Parks Commission, is doing a one-year study of the types of recreation that people participate in along the river. **Because you have the opportunity to experience the Missouri River up close, your input into this study is very important.** You are one of a small number of people being asked to provide information about your river-related recreation activities, such as hunting, fishing, and boating. Without your help, this study cannot succeed.

With this letter, you will find a blue sheet that has a list of activities, as well as lists of wildlife and fish species. Also enclosed is an activity diary we are asking you to complete about your river-related recreation activities. About every 4 weeks, you will get another activity diary in the mail, as well as a postage-paid envelope to return the activity diary you just completed. As you can see on the activity diary, there is a line, or row, for each day. For each day, please fill in the total number of people at your river residence that day. We would also like you to tell us the number of people who did each of the three main activities. Please do not be alarmed by the table! Once you complete it for a day or two, it is very easy to do. An example is given on the activity diary and explained below to help you. Many river residents keep the activity diary posted on their refrigerator. Some people find it easier to do the activity diary every day, and others do it every few days instead. Whichever works for you is fine.

In the example, the total number in the party was 4 people at your residence. The main activity participated in was fishing with a rod and reel. Looking at the blue sheet, you can see that this activity is listed as number 1, so a "1" is written in the box on the activity diary. The amount of time spent fishing was 3 hours, so "3 hours" is written in the next box. Three of the 4 people in the party were fishing, so a "3" is written in the next box for this example. The same pattern is followed for boating (activity 31, 2 hours, 4 people), and for sunbathing (activity 47, 1 hour, 2 people). Also filled in are the boxes about the fish harvested. While fishing, members of the party caught 11 carp (the blue sheet tells you this is species 070), but they did not keep any. There were 5 channel catfish caught (species 230), 2 of which were kept. Keep the same kind of list for each day, depending on what your party does that day. If you forget to fill out the activity

diary for a few days, just give us your best estimate. **After 2 weeks, turn the activity diary over and do the next 2 weeks the same way.**

If you access the Missouri River away from your residence, such as at a public ramp, marina, or park, please **do not** include this trip to the Missouri River on your activity diary. We are collecting this information in person, using survey clerks and special sampling methods. If a survey clerk is present at the public access site when you visit, please provide the clerk with the information asked. This information will represent your trip to the site that day, as well as other trips that you and others might make when the survey clerk is not present. Again, on your activity diary please only record those activities that you and your friends make to your land or residence along the Missouri River.

How about those weeks or months when you do not use your river residence? If you did not use your residence at all during the 4 weeks, just circle the word "NO" that appears on the top of the activity diary. Keep the activity diary in a safe place, and when the next postage-paid envelope arrives, mail it back to us. **It is very important that the activity diary be returned even for those months that you did not use your river residence.**

Many people have told us it is fun being a part of this study, and we really hope you will enjoy it, too. Please feel free to contact us, **toll-free**, at 1-866-577-8611 if you have any questions. If you prefer, you can email me your questions at Steve.Sheriff@mdc.mo.gov. We can't do this project without your help!

Sincerely,

Steven L. Sheriff
Project Coordinator
Missouri River Public Use Assessment

Appendix L. Special instructions along the Osage River

Special instructions that were sent to recipients of diaries who used private property to access the river along the Osage River (a) and Gasconade River (b) during the 2004-2005 Missouri River Public Use Assessment. Return to page 45.

a)

Dear Osage River User:

Thank you for being a part of the Missouri River Public Use Assessment. Because you may do most of your river activities on the Osage River, we would like to have you separate these activities from those that you do in the Missouri River. To do this, please place an "R" after the activity code for those activities that you do upstream of the railroad bridge on the Osage River. An "M" should be placed after the activity code if you were below the railroad bridge on the Osage River. An activity that you are involved in during a day on both sides of the railroad bridge should have an "M" placed after the activity code.

If you have any questions about the activity diary or these special instructions for you, please call me at 1-866-577-8611. Again, thank you for your help in this important study of river users.

Steve Sheriff

b)

Dear Gasconade River User:

Thank you for being a part of the Missouri River Public Use Assessment. Because you may do most of your river activities on the Gasconade River, we would like to have you separate these activities from those that you do in the Missouri River. To do this, please place an "R" after the activity code for those activities that you do upstream of the Highway 100 bridge near the Gasconade Park Access on the Gasconade River. An "M" should be placed after the activity code if you were below the Highway 100 bridge on the Gasconade River. An activity that you are involved in during a day on both sides of the Highway 100 bridge should have an "M" placed after the activity code.

If you have any questions about the activity diary or these special instructions for you, please call me at 1-866-577-8611. Again, thank you for your help in this important study of river users.

Steve Sheriff

Appendix M. Follow-up letter

Follow-up letter sent to recipients of diaries during subsequent sampling intervals after they had received their first diary and package of information about the 2004-2005 Missouri River Public Use Assessment. Return to page 45.

MISSOURI DEPARTMENT OF CONSERVATION

Headquarters
2901 West Truman Boulevard, P.O. Box 180, Jefferson City, Missouri 65102-0180
Telephone: 573/751-4115 ▲ Missouri Relay Center: 1-800-735-2966 (TDD)

JOHN D. HOSKINS, Director

REPLY TO: Resource Science Center
1110 S. College Ave.
Columbia, MO 65201
Telephone: 866-577-8611
Fax: 573-882-4517

Dear Missouri River Resident:

Thank you for your participation so far in the Missouri River Public Use Assessment. Because you are one of a small number of people being asked to provide information about your river-related recreation activities, this study cannot succeed without you.

With this letter, you will find a new activity diary as well as a postage-paid envelope. In a few days you should have completed the activity diary you are working on right now; please use the enclosed envelope to mail it back to us. Also, the lists of activities and species have been repeated on the back of this letter to help you in the event that the blue sheet is misplaced. A new activity diary will arrive every 4 weeks, along with a postage-paid envelope to return the previous activity diary.

Please remember that in addition to your river recreation, we are also interested in those times that you **do not** use your river residence. If during a 4-week period you do not use your river residence **at all**, just circle the word "NO" that appears on the top of the activity diary, keep the activity diary in a safe place, and mail it back to us when the next postage-paid envelope arrives.

If you access the Missouri River away from your residence, such as at a public ramp, marina, or park, please **do not** include this trip to the Missouri River on your activity diary. We are collecting this information in person, using survey clerks and special sampling methods.

We really hope that you are enjoying being a part of this study. Please feel free to contact us, **toll-free**, at 1-866-577-8611 if you have any questions. If you prefer, you can email me your questions at Steve.Sheriff@mdc.mo.gov. We can't do this project without your help!

Sincerely,

Steven L. Sheriff
Project Coordinator
Missouri River Public Use Assessment

Appendix N. Postcard survey example

Example of postcard survey sent to non-respondents to the diary used during the 2004-2005 Missouri River Public Use Assessment. Return to page 45.

1. Did you own, rent, or have club membership to land along the Missouri River during 2004?
   ❑ Yes
   ❑ No Skip to number 4.

2. If you answered "yes" to question 1, did you use this land in 2004 to gain access to the Missouri River?
   ❑ Yes
   ❑ No Skip to number 4.

3. If you answered "yes" to question 2, how many days would you estimate that you used this land during 2004 to do some activity along the Missouri River?
   _____ Days

4. How many people are in your household?
   _____ Adults (18 years old or older)
   _____ Children (17 years old or younger)

Thank you for your help—Missouri River Public Use Assessment

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
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MISSOURI DEPARTMENT OF CONSERVATION
RESOURCE SCIENCE DIVISION
1110 S COLLEGE AVE
COLUMBIA MO 65201-9989

MISSOURI RIVER PUBLIC USE ASSESSMENT

The Missouri River needs your help. Information about how the public uses the Missouri River is being collected from Yankton, South Dakota to St. Louis, Missouri. This information is being collected to aid in the management of the Missouri River's natural resources. This is a joint effort of the Missouri Department of Conservation, Nebraska Game and Parks Commission, Kansas Department of Wildlife and Parks, Iowa Department of Natural Resources, and South Dakota Department of Game, Fish, and Parks. Your answers to these brief questions will be very helpful. After you complete the question card, tear it off and drop it in the mail; no postage is required. If you have any questions about this effort, call toll free 1-866-577-8611. Thank you very much for helping us better understand users of the Missouri River.

Sincerely,
Steve Sheriff

THANK YOU FOR YOUR COOPERATION

Appendix O. Example of questionnaire to diary respondents

Example of questionnaire sent to respondents of the diary used during the 2004-2005 Missouri River Public Use Assessment.

Return to page 46 or page 61.

Public Use of the Missouri River

A Survey for:
Missouri Department of Conservation
Nebraska Game and Parks Commission
Kansas Department of Wildlife and Parks
Iowa Department of Natural Resources
South Dakota Department of Game, Fish and Parks

By answering the following questions, you will help us understand how the public uses the Missouri River and how to better manage the Missouri River's resources for your enjoyment. Please provide your best estimate if you cannot remember exact figures. Your answers will never be associated with your name.

If you have any questions about this survey, please contact:

Steve Sheriff
Missouri River Public Use Assessment Coordinator
Missouri Department of Conservation
1110 S College Avenue
Columbia, MO 65201
1-866-577-8611 (toll free)

Thank you for your help with the Missouri River Public Use Assessment and the Missouri River's resources.

MISSOURI RIVER PUBLIC USE ASSESSMENT

PART I: YOUR PLACE ALONG THE MISSOURI RIVER

1. The place that you have along the Missouri River is a *(check one)*:

- ❑ Members club
- ❑ Investment that is seldom visited
- ❑ Weekend/Vacation spot
- ❑ Summer residence
- ❑ Primary year-round residence
- ❑ Place that was sold to someone else during 2004 (Skip to Part III, Question 10)
- ❑ Place that was sold to someone else before 2004 (Skip to Part III, Question 10)
- ❑ I don't have a place along the Missouri River (Skip to Part III, Question 10)
- ❑ Other (Please specify):_____

2. The place that you have along the Missouri River is *(check one)*:

- ❑ Owned by you
- ❑ Land owned by someone else, but improvements, including shelters, are owned by you
- ❑ Rented from someone else, including rental of buildings, trailer, or other improvements
- ❑ Owned by a group or club
- ❑ Owned entirely by someone else and they let you use it
- ❑ Other (Please specify):_____

3. The place that you have along the Missouri River is a *(check one)*:

- ❑ House or cabin
- ❑ House trailer
- ❑ Area where you can set up your RV, camping trailer, or tent
- ❑ Other (Please specify):_____

3a. Does your place along the Missouri River have *(check one response for each)*:

Sleeping facilities	❑ Yes	❑ No
Indoor plumbing	❑ Yes	❑ No
Electricity	❑ Yes	❑ No
A boat dock	❑ Yes	❑ No

4. Which of the following do you own and use on the Missouri River? *(check all that apply)*

- ☐ Motorized boat
- ☐ Kayak, canoe, or a boat without a motor
- ☐ None of the above

5. Number of miles (one way) from your primary residence to your place along the Missouri River:

_____ miles (If your place along the river is your primary residence, please enter '0.')

PART II: HOW YOU USED YOUR PLACE ALONG THE MISSOURI RIVER IN 2004

6. How many days did you, your family, and friends, spend at your place along the Missouri River during 2004?

_____ Days (Guess if you do not remember exactly)

7. Please list the 4 most important activities (Number 1 being the most important) you, your family, and friends did in 2004 at your place along the Missouri River. Also, how many days did you do each activity in 2004? (Please include your estimate of days even if you may have previously reported this information on an activity diary. Guess if you do not remember exactly):

Activity	Days during 2004
1 _____	_____
2 _____	_____
3 _____	_____
4 _____	_____

8. How many people, including yourself, used your place along the Missouri River in 2004 to do an activity on the Missouri River? (Guess if you do not remember exactly):

_____Number of Adults (18 years old or older)
_____Number of Children (17 years old or younger)

9. The cost of travel to the Missouri River often increases due to gasoline prices. In addition, the costs often increase to maintain a residence or cabin (for example, higher electricity and propane costs). If these annual costs of visiting and staying at the Missouri River were $75 higher would you have paid these higher costs to visit your place on the Missouri River as you did in 2004?

- ☐ YES
- ☐ NO

PART III: ABOUT YOU

10. What is the zip code of your primary residence? _____

11. How many people live in your household?

Number of Adults (18 years old or older):

_____males _____females

Number of Children (17 years old or younger):

_____males _____females

12. What race or ethnic group do you consider yourself? ***(Please check the one you primarily consider yourself.)***

- ☐ White
- ☐ Black or African-American
- ☐ Hispanic or Latino
- ☐ Asian—(Chinese, Asian Indian, Japanese, Korean, Filipino, Vietnamese)
- ☐ American Indian—(native American, Alaska native, native Hawaiian)
- ☐ Other

13. Does anyone in your household have any of the following disabilities?

Hearing Impaired	☐ Yes	☐ No
Visually Impaired	☐ Yes	☐ No
Learning Impaired	☐ Yes	☐ No
Mobility Impaired	☐ Yes	☐ No

Other (Please Specify):_____

THANK YOU FOR YOUR TIME AND COOPERATION

MISSOURI RIVER PUBLIC USE ASSESSMENT

TO RETURN THIS QUESTIONNAIRE,
SIMPLY SEAL IT WITH TAPE AND DROP IT IN THE MAIL.
NO POSTAGE IS NECESSARY.

(WRITTEN COMMENTS ARE WELCOME.
IF YOU DESIRE A RESPONSE, PLEASE INCLUDE
YOUR NAME AND ADDRESS WITH YOUR COMMENT.)

TAPE
HERE
DO NOT
STAPLE

TAPE
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UNITED STATES

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MISSOURI DEPARTMENT OF CONSERVATION
RESOURCE SCIENCE DIVISION
1110 S COLLEGE AVE
COLUMBIA MO 65201-9945

Appendix P. Letter of transmittal sent with the initial mailing

Letter of transmittal sent with the initial mailing of the questionnaire to respondents for the private lands without general public access portion of the 2004-2005 Missouri River Public Use Assessment. Return to page 46.

MISSOURI DEPARTMENT OF CONSERVATION

Headquarters

2901 West Truman Boulevard, P.O. Box 180, Jefferson City, Missouri 65102-0180

Telephone: 573/751-4115 ▲ Missouri Relay Center: 1-800-735-2966 (TDD)

JOHN D. HOSKINS, Director

REPLY TO: Resource Science Center
1110 S. College Ave.
Columbia, MO 65201
Telephone: 886-577-8611
Fax: 573-882-4517

Dear Missouri River User:

Your help is needed in completing a study of Missouri River users for the Missouri Department of Conservation, Nebraska Game and Parks Commission, Kansas Department of Wildlife and Parks, Iowa Department of Natural Resources, and South Dakota Department of Game, Fish and Parks. This study is part of an effort to learn about people who use the Missouri River and the activities that they do on or along the river, from Yankton, South Dakota to St. Louis, Missouri.

Because you have access to the Missouri River from private property that you own, rent, or have a club membership for, we are asking for your help. You may also have received activity diaries as part of the Missouri River Public Use Assessment this past year. The survey we have included with this letter is the last part of the study; please fill it out even if you have filled out activity diaries.

Results from this survey will be used to help each of the states involved to better manage the natural resources of the Missouri River. By understanding methods of access, activities and amount of time spent doing each activity, and the value placed on the Missouri River, policies can be adapted to better fit the needs of users like you.

Your answers are completely confidential and will not be associated with your name. You can help us very much by taking a few minutes to share your experiences on the Missouri River. After completing the questionnaire, simply tape it shut and drop it in the mail; no postage is required.

If you have any questions or comments concerning this study, I would be happy to talk with you. My toll free number is 1-866-577-8611.

Thank you very much for helping with this important study of the Missouri River.

Sincerely,

Steven L. Sheriff
Missouri River Public Use Assessment Coordinator

Appendix Q. Letter of transmittal sent with the follow-up mailing

Letter of transmittal sent with the follow-up mailing of the questionnaire to respondents who had not responded to the initial mailing for the private lands without general public access portion of the 2004-2005 Missouri River Public Use Assessment. Return to page 46.

MISSOURI DEPARTMENT OF CONSERVATION

Headquarters

2901 West Truman Boulevard, P.O. Box 180, Jefferson City, Missouri 65102-0180
Telephone: 573/751-4115 ▲ Missouri Relay Center: 1-800-735-2966 (TDD)

JOHN D. HOSKINS, Director

REPLY TO: Resource Science Center
1110 S. College Ave.
Columbia, MO 65201
Telephone: 886-577-8611
Fax: 573-882-4517

Dear Missouri River User:

About a month ago, I sent a questionnaire to you about Missouri River users. Our records indicate that we have not received your response. The study is being conducted for the Missouri Department of Conservation, Nebraska Game and Parks Commission, Kansas Department of Wildlife and Parks, Iowa Department of Natural Resources, and South Dakota Department of Game, Fish, and Parks, and it will help these agencies to better manage the natural resources of the Missouri River for people like you.

Because you have access to the Missouri River from private property that you own, rent, or have a club membership for, we are asking for your help. Information from everyone is important so that we have a complete understanding of public demand for the Missouri River by you and others. The responses we have received so far are helping us to understand the different ways people use the Missouri River from Yankton, South Dakota to St. Louis, Missouri. Please take a few minutes to complete this short survey. Your answers are confidential and will not be connected with your name. After completing the questionnaire, simply tape it shut and drop it in the mail; no postage is required.

Some people have told us that they do not have private access to the Missouri River, because they have sold their property or for some other reason. If that is true for you, too, please tell us that on the questionnaire and return it to us so we can remove your name from our mailing list.

If you have any comments concerning this study, I would be happy to talk with you. My toll free number is 1-866-577-8611.

Thank you very much for your help with this important study of the Missouri River.

Sincerely,

Steven L. Sheriff
Missouri River Public Use Assessment Coordinator

Appendix R. Record form for fishing tournaments

Record form sent to fishing tournament organizers to provide us with information about their tournament on the Missouri River during the 2004-2005 Missouri River Public Use Assessment.

Return to page 50.

MISSOURI RIVER PUBLIC USE ASSESSMENT
CATFISH TOURNAMENT INFORMATION

Tournament Name: _____ Date(s) of Tournament: _____

Tournament Location: _____

Tournament Organizer and Contact: _____

Address: _____

City, State, Zip: _____

Telephone: _____

E-Mail: _____

Tournament Information:

	NUMBER
Number of Boats	
Number of People Fishing	
Average Number of Hours Fished: (Per Participant)	
Number of Other People Involved: (Including audience at end and officials)	

Fish Caught/Kept:

SPECIES	CAUGHT	KEPT
Blue Catfish		
Channel Catfish		
Flathead Catfish		
Other:		
Other:		
Other:		

Please record zip code information about participants on the reverse side.

ZIP CODE SUMMARY OF TOURNAMENT PARTICIPANTS

Zip Code	Number of Participants from This Zip Code	Zip Code	Number of Participants from This Zip Code	Zip Code	Number of Participants from This Zip Code

Questions concerning this effort can be directed, toll-free, to: 1-866-577-8611

Please Return Form to: Missouri River Public Use Assessment, Resource Science Center, 1110 S College Ave, Columbia, MO 65201

- Thank You -

Appendix S. Letter of transmittal for fishing tournaments

Letter of transmittal sent along with the record form to fishing tournament organizers during the 2004-2005 Missouri River Public Use Assessment. Return to page 50.

MISSOURI DEPARTMENT OF CONSERVATION

Headquarters

2901 West Truman Boulevard, P.O. Box 180, Jefferson City, Missouri 65102-0180
Telephone: 573/751-4115 ▲ Missouri Relay Center: 1-800-735-2966 (TDD)

JOHN D. HOSKINS, Director

REPLY TO: Resource Science Center
1110 S. College Ave.
Columbia, MO 65201
Telephone: 1-866-577-8611
Fax: 573-882-4517

Dear Catfish Tournament Organizer;

Thank you for agreeing to help us with the Missouri River Public Use Assessment. By supplying a summary of your tournament results, your report will allow us to include information from your tournament with that from others to show the importance of this activity on the Missouri River. The benefit to your contestants is that a survey clerk will not disrupt their preparations to leave the Missouri River access site at the end of the tournament.

The information that we are asking for is simply a summary of information that you already collect. This information includes the number of boats participating in the tournament, the total number of participants, the number of hours that were fished, a summary by species of the number of fish caught and those kept, and zip codes of the participants. The zip code information, which you would record on the back of the enclosed form, can be summarized, too. If zip codes are not a part of your registration form, then city and state information would be useful to us. However, even without this information, please complete the summary data on the front of the form and return the completed form in the enclosed business reply envelope.

If a survey clerk happens to be collecting information at the Missouri River access site on the day of your tournament, we would appreciate you and your staff introducing yourselves to this person at a convenient opportunity. You might also indicate which vehicles and people are associated with your tournament, so that the survey clerk will not attempt to stop and interview these people. This should minimize any inconvenience on you and your tournament participants and still allow for your valuable information to be included as part of the Missouri River Public Use Assessment.

I have included a short explanation about the Missouri River Public Use Assessment. You may share this as you please with others, including your tournament participants. If you have any questions, please call me, toll-free, at 1-866-577-8611.

Thanks, again, for your willingness to help us as we help you.

Sincerely,

Steven L. Sheriff
Missouri River Public Use Assessment Coordinator

Appendix T. Estimates of Missouri River public use within selected segments of the river for Public Accesses and Areas

Return to page 57.

Introduction

We anticipated the activities in which the public would engage would vary from the mouth of the Missouri River to Gavins Point Dam. The river is channelized for navigation purposes between St. Louis, Missouri and Sioux City, Iowa with less anthropogenic manipulation between Sioux City and Gavins Point Dam. The river is also wider with a greater discharge at the mouth and narrows with less volume and flow of water as one approaches Sioux City. These changes in the river can also influence how the public uses the Missouri River as well as creating management challenges for fish and wildlife managers and their agencies. To examine these changes in how the public uses the Missouri River and amount of this use as one goes from the river's mouth to Gavins Point Dam, we were able to divide our public accesses and areas data collected using our access and bus-route methods into a number of segments for estimation purposes. Unfortunately, the residence data could not be divided into similar segments. As we report results below, we will also include estimates from the clubs, excursion boats, and fishing tournaments that could be identified by segment.

Description of Segments

We divided the 1,305 km (811 miles) study stretch of the Missouri River into eleven segments to allow comparisons of river use among segments of interest (Figure T-1, page 276). For the first four segments, we divided the Missouri River from the Iowa-Missouri state line to the mouth into segments nearly identical to those used by Fleener (1989). His first segment, A, was from St. Louis to near Jefferson City (river km 0 – 241; river miles 0 – 150). We attempted to be as close to his division as possible. We included the Carl Noren Access in this segment, even though this access was not built until after Fleener had completed his study and he had made his segment end at the point where this access was built. Fleener's next segment, B, extended from Jefferson City to nearly Miami (river km 241 – 422; river miles 150 – 262). Fleener's third segment, C, extended from Miami to Atchison, Kansas (river km 422 – 694; river miles 262 - 431). Our information for this segment also includes some of the public use that occurred from the bank on the north side of the river upstream from the Grand River (river km 404; river mile 251.5) up to Miami. Fleener's fourth segment, D, covered the river from Atchison, Kansas to the Iowa-Missouri state line (river km 694 – 890; river miles 431 – 553). Our segment was identical to his for major accesses, but started at a river km 674 (river mile 419) on the west side of the river for minor accesses included as a part of our bus-route method.

The Nebraska Game and Parks Commission asked us to provide information for seven segments from the Nebraska-Kansas state line to Gavins Point Dam near Yankton, South Dakota. Our Segment 1 stretched from the Nebraska-Kansas state line to the Iowa-

Missouri state line (river km 789 – 890; river miles 490 – 553), and was a subset of segment D. The next segment, Segment 2, extended from the Iowa-Missouri state line to the mouth of the Platte River (river km 890 – 958; river miles 553 – 595). Segment 3 extended from the mouth of the Platte River near Bellevue, Nebraska to north of N.P. Dodge Park and Marina at Omaha, Nebraska (river km 958 – 1,015; river miles 595 – 631). Segment 4 consisted of Boyer Chute and DeSoto National Wildlife Refuges. Segment 5 covered the Missouri River from Wilson Island State Recreation Area near Missouri Valley, Iowa to the Iowa Department of Natural Resources' Weedland Access south of Sioux City, Iowa (river km 1,032 – 1,165; river miles 641 – 724). Segment 6 covered the Sioux City, Iowa area from Cottonwood Cove Access at Dakota City, Nebraska to the upstream public boat ramp at Chris Larsen Park (river km 1,165 – 1,181; river miles 724 – 734). This segment included Scenic Park Access at South Sioux City, Nebraska and the Chris Larsen Marina and public boat ramps. Finally, Segment 7 extended from the Big Sioux River mouth to Gavins Point Dam near Yankton, South Dakota (river km 1,181 – 1,305; river miles 734 – 811).

The above descriptions are not detailed, but give the general locations to make it easier to find the segment of interest below. We provide further details concerning descriptions of each segment as part of each segment's results.

Results

Estimates of River Use in Missouri Compiled within Fleener's Segments.

We summarized our estimates of Missouri River public use to allow easier comparison with Fleener's (1989) estimates of Missouri River use in 1983-1987. The data collected using our access and bus-route methods for the segments delineated by Fleener (1989) covered all of the accesses included in his study plus many more lesser-used accesses which were not in existence during his study.

Fleener's Segment A. Fleener's Segment A covered the Missouri River from its mouth near St. Louis to the Missouri River Highway 63/54 bridge at Jefferson City. For this summary, we did not include our results from Maple Island Access on the Mississippi River and Mari-Osa Access on the Osage River because Fleener did not include these two accesses within his study. However, we did include results from the Carl Noren Access beneath the Highway 63/54 bridge at Jefferson City and estimates of public use at Columbia Bottoms Conservation Area. Thus the following results cover virtually the same stretch of river as Fleener did in his Segment A.

We estimated 500,290 (SE = 21,230) individual-visits by 292,840 (SE =12,570) party-visits were made within Segment A during our study (Table T-1, page 192). These individual visitors spent an estimated 1,074,570 (SE = 148,630) hours on or along the river (Table T-1, page 192). The top five activities in which users participated were sightseeing (162,270 individual-visits; SE = 6,530), fishing (110,550 individual-visits; SE = 9,540), boating (74,470 individual-visits; SE = 11,490), exercising (53,470 individual-visits; SE = 6,480), and loafing (22,640 individual-visits; SE = 1,800). These activities

represented 84.6% (SE = 5.0%) of the estimated total of individual-visits. Visitor fishing and hunting successes were reported in Table T-2 and Table T-3 (pages 195 and 197), respectively, and estimates of visitor socio-demographic characteristics were presented in Table T-4 (page 199). An individual visitor was an average 55.8 (SE = 6.0) km (34.6 miles; SE = 3.7) from their home when visiting accesses or areas within this segment. Economic benefits for this segment as measured by consumer surplus (CS) were estimated to be $4,279,196 (95% CI = [$3,855,560, $4,700,037]) by the travel cost method (TCM) for 370,572 visits by individuals 18 years or older. The average CS per visit was estimated to be $11.55 (95% CI = [$10.40, $12.68]). From the discrete choice model (DCM), the "willingness-to-pay" (WTP) was estimated to be $12,068,512 (95% CI = [$9,861,932, $14,335,472]) for 214,205 parties visiting within this segment. The average WTP per party was estimated to be $56.34 (95% CI = [$46.04, $66.92]). (See the Methods section in the main body of this report for a full description of how these estimates were obtained.)

Six catfish tournaments were held in this segment including one for which we did not receive results. The five tournaments for which we received results accounted for 47 boats, 89 anglers, and 707 angler-hours. These anglers caught 28 blue catfish of which 3 were kept, 115 channel catfish of which 2 were kept, 30 flathead catfish of which 3 were kept, and 3 drum that were caught and released. Another catfish tournament held out of Maple Island Access at West Alton, Missouri had 2 boats with 4 anglers fishing in the Missouri River for a total of 48 angler-hours. They caught 12 blue catfish of which all were released.

The RiverBarge Excursion docked on two different occasions in St. Charles and in total 232 passengers only observed the Missouri River from the mouth up to St. Charles without using any other segments of the Missouri River. The first occasion was in May 2004 during the Lewis and Clark Commemoration event held at River Front Park. During this occasion a total of 174 passengers were accommodated on the cruise which originated on the Mississippi River at Memphis, Tennessee. Eighty-eight passengers disembarked at St. Charles and 86 passengers left St. Charles for a trip back to Memphis, Tennessee. On the second occasion 58 passengers who had boarded the boat in Louisville, Kentucky disembarked in St. Charles, Missouri. For the next leg of the Missouri River cruise, 170 passengers rode from St. Charles to Kansas City, Missouri, but these passengers are not included within the reported segment total of 232 passengers.

Fleener's Segment B. For Segment B we included the stretch of the Missouri River from above the Missouri River Highway 63/54 bridge at Jefferson City to Brunswick, Missouri on the north side of the river and just downstream of the Highway 41 bridge near Miami, Missouri on the south side. However, we excluded our public use results from Brunswick during January 3 through March 26, 2004 and January 1 through January 28, 2005 from these results because the Grand River provided minimal access to the Missouri River during these periods. We combined Brunswick access results with the Miami public access results for these two periods and these results are reported as part of Segment C, below.

We estimated 176,550 (SE = 12,170) individual-visits were made by 95,890 (SE =6,250) party-visits within Segment B during our study (Table T-5, page 200). Individual visitors spent an estimated 737,530 (SE = 119,570) hours on or along the river within this segment (Table T-5, page 200). The top five activities in which users participated were fishing (69,560 individual-visits; SE = 6,860), sightseeing (46,440 individual-visits; SE = 6,200), boating (12,150 individual-visits; SE = 1,350), loafing (11,930 individual-visits; SE = 2,480), and picnicking (9,300 individual-visits; SE = 3,270). These five activities represented 84.6% (SE = 8.2%) of the estimated total number of individual-visits. Visitor fishing and hunting successes were reported in Table T-6 and Table T-7 (pages 203 and 205), respectively, and estimates of visitor socio-demographic characteristics were presented in Table T-8 (page 207). An individual visitor was an average 84.0 (SE = 19.2) km (52.2 miles; SE = 12.0) from their home when visiting accesses or areas within this segment. The economic benefits for this segment as measured by CS were estimated to be $1,896,645 (95% CI = [$1,652,718, $2,150,612]) by the TCM for 138,104 visits by individuals 18 years or older. The average CS per visit was estimated to be $13.73 (95% CI = [$11.97, $15.57]). From the DCM, the WTP was estimated to be $2,380,988 (95% CI = [$1,620,038, $3,154,843]) for 62,111 parties visiting this segment. The average WTP per party was estimated to be $38.33 (95% CI = [$26.08, $50.79]).

Seven catfish tournaments were held in this segment. Unfortunately, we were not able to obtain public use results for any of these tournaments.

Fleener's Segment C. Fleener's Segment C covered use occurring upstream of the Grand River mouth and the public access just upstream of the Miami Highway 41 bridge to and including the boat ramps at Atchison, Kansas. From January 3 through March 26, 2004, the results reported here also included public use at the Jentell Brees Access south of St. Joseph, Missouri. This segment also included estimates of public use at Grand Pass Conservation Area.

We estimated that 221,560 (SE = 10,400) individual-visits by 130,830 (SE = 6,360) party-visits were made within Segment C during our study (Table T-9, page 208). Individual visitors spent an estimated 388,820 (SE = 28,500) hours in this segment (Table T-9, page 208). The top five activities in which users participated were sightseeing (84,730 individual-visits; SE = 5,270), fishing (50,500 individual-visits; SE = 5,290), exercising (35,450 individual-visits; SE = 4,330), loafing (9,480 individual-visits; SE = 1,830), and product gathering (7,050 individual-visits; SE = 1,480). These five activities represented 84.5% (SE = 5.7%) of the estimated total number of individual-visits. Visitor fishing and hunting successes were reported in Table T-10 and Table T-11 (page 211 and page 213), respectively, and estimates of visitor socio-demographic characteristics were presented in Table T-12 (page 215). An individual visitor was an average 84.5 (SE = 15.0) km (52.5 miles; SE = 9.3) from their home when visiting accesses or areas within this segment. The economic benefits for this segment as measured by CS were estimated to be $1,791,209 (95% CI = [$1,603,482, $1,982,764]) by the TCM for 159,581 visits by individuals 18 years or older. The average CS per visit was estimated to be $11.22 (95% CI = [$10.05, $12.42]). From the DCM, the WTP was

estimated to be $4,948,541 (95% CI = ($4,112,458, $5,826,880)] for 87,829 parties visiting within this segment. The average WTP per party was estimated to be $56.34 [95% CI = ($46.82, $66.34]).

One catfish tournament for which we received results was held in this segment. This tournament involved 42 boats with 83 anglers who fished a total of 1,245 angler-hours. These anglers caught 42 blue catfish, 72 channel catfish, and 53 flathead catfish of which all fish were released.

The RiverBarge Excursion disembarked and boarded a total of 711 passengers in Kansas City on a round-trip tour up the Missouri River to Sioux City, Iowa. This tour of the Missouri River occurred during August 2004.

Fleener's Segment D. This segment covers public accesses from just upstream of the Atchison boat ramps to the Iowa-Missouri state line. These results do not include estimates of public use from January 3 through March 26, 2004 at Jentell Brees Access, because this access was sampled in conjunction with the Atchison boat ramps during this period. This segment also included estimates of public use for Worthwine Island, Bob Brown, and Thurnau Conservation Areas.

We estimated 326,710 (SE = 16,760) individual-visits by 178,870 (SE = 8,360) party-visits were made within Segment D during our study (Table T-13, page 216). These individual visitors spent an estimated 1,050,910 (SE = 71,500) hours within this segment (Table T-13, page 216). The top five activities in which users participated were

sightseeing (109,210 individual visits; SE = 9,100), fishing (75,660 individual-visits; SE = 6,460), exercising (54,930 individual-visits; SE = 7,530), hunting (15,640 individual-visits; SE = 3,850), and loafing (14,940 individual-visits; SE = 3,100). These five activities represented 82.8% (SE = 6.1%) of the estimated total number of individual-visits. Visitor fishing and hunting successes were reported in Table T-14 and Table T-15 (pages 219 and 221), respectively, and estimates of visitor socio-demographic characteristics were presented in Table T-16 (page 223). An individual visitor was an average 86.6 (SE = 19.8) km (53.8 miles; SE = 12.3) from their home when visiting accesses or areas within this segment. The economic benefits for this segment as measured by CS were estimated to be $3,952,921 (95% CI = [$3,291,072, $4,669,631]) by the TCM for 234,119 visits by individuals 18 years or older. The average CS per visit was estimated to be $16.88 (95% CI = [$14.06, $19.95]). From the DCM, the WTP was estimated to be $6,034,319 (95% CI = [$4,480,243, $7,686,601]) for 124,413 parties visiting within this segment. The average WTP per party was estimated to be $48.50 (95% CI = [$36.01, $61.78]).

We received information about the visitations at Indian Cave State Park for the period from January through December 2004. They had a total of 167,150 visitations to the park during this period. This value includes some of the estimated use reported above for this segment.

We knew of and received results from six catfish tournaments in this segment. Reported results accounted for 129 boats, 357 anglers, and 3,367 fishing hours. In five of these

tournaments, 216 anglers fished a total of 2,557 angler-hours in 104 boats and caught 11 blue catfish of which 4 were kept, 84 channel catfish of which 8 were kept, 131 flathead catfish of which 15 were kept, and 255 carp of which 5 were kept. At the sixth tournament the organizers reported that 90 anglers fished 810 angler-hours in 25 boats and caught 59.1 pounds of blue catfish and 199.4 pounds of flathead catfish. All fish caught during this latter tournament were released.

The home port of the "Spirit of Brownville" was within this segment. During its season from May through October 2004, they accommodated 5,563 passengers on tours of the Missouri River in this area.

Estimates of Use within the Nebraska Reach.

We summarized results for the Nebraska reach of the Missouri River and provided estimates for seven separate segments of this reach.

Nebraska's Segment 1. Our access and bus-route method samples covered the area from the Nebraska-Kansas state line to the Iowa-Missouri state line. This segment was part of the upper half of Fleener's Segment D. Indian Cave State Park was included in this segment.

We estimated 78,170 (SE = 6,930) individual visits by 41,150 (SE = 3,460) parties were made within Nebraska's Segment 1 during our study (Table T-17, page 224). Individual visitors spent an estimated 533,080 (SE = 45,660) hours in this segment (Table T-17. page 224). The top five activities in which users participated were fishing (26,290

individual-visits; SE = 4,400), sightseeing (23,770 individual-visits; SE = 2,780), loafing (6,860 individual-visits; SE = 2,690), camping (6,480 individual- visits; SE = 700), and hunting (4,480 individual- visits; SE = 1,290). These five activities represented 86.8% (SE = 10.9%) of the estimated total number of individual-visits. Visitor fishing and hunting successes were reported in Table T-18 and Table T-19 (page 227 and page 229), respectively, and estimates of visitor socio-demographic characteristics were presented in Table T-20 (page 231). An individual visitor was an average 95.4 (SE = 9.9) km (59.3 miles; SE = 6.2) from their home when visiting accesses or areas within this segment. The economic benefits for this segment as measured by CS were estimated to be $1,525,378 (95% CI = [$1,277,799, $1,822,292]) by the TCM for 60,333 visits by individuals 18 years or older. The average CS per visit was estimated to be $25.28 (95% CI = [$21.18, $30.20]). From the DCM, the WTP was estimated to be $1,875,300 (95% CI = [$1,316,315, $2,497,384]) for 32,900 parties visiting this segment. The average WTP per party was estimated to be $57.00 (95% CI = [$40.01, $75.91]).

We received information about visitations at Indian Cave State Park for the period from January through December 2004. They had a total of 167,150 visitations to the park during this period. This value includes some of the estimated use reported above for this segment.

Four catfish tournaments were held in this segment including one for which we did not receive results. Results from these tournaments included 73 boats, 158 anglers, and 2,035 fishing hours. These anglers caught 6 blue catfish of which 4 were kept, 62

channel catfish of which 8 were kept, 107 flathead catfish of which 15 were kept, and 255 carp of which 5 were kept.

The home port of the "Spirit of Brownville" was within this segment. During its cruise season from May through October 2004, they accommodated 5,563 passengers on tours of the Missouri River in this segment.

Nebraska's Segment 2. Our access and bus-route method samples for Nebraska Segment 2 covered the area from the Iowa-Missouri state line to the mouth of the Platte River near Plattsmouth, Nebraska. Our estimates for this segment also included public use at Randall W. Schilling Wildlife Management Area.

We estimated 149,740 (SE = 11,450) individual-visits by 87,210 (SE = 6,210) party-visits were made within Nebraska's Segment 2 during our study (Table T-21, page 232). Individual visitors spent an estimated 523,980 (SE = 79,140) hours in this segment (Table T-21, page 232). The top five activities in which users participated were hunting (37,410 individual-visits; SE = 7,320), boating (25,670 individual-visits; SE = 5,580), fishing (23,500 individual-visits; SE = 3,630), sightseeing (17,020 individual-visits; SE = 3,230), and loafing (13,240 individual-visits; SE = 3,900). These five activities represented 78.0% (SE = 9.5%) of the estimated total number of individual-visits. Visitor fishing and hunting successes were reported in Table T-22 and Table T-23 (pages 235 and 237), respectively, and estimates of visitor socio-demographic characteristics were presented in Table T-24 (page 239). An individual visitor was an average 43.6 (SE = 15.5) km (27.1

miles; SE = 9.6) from their home when visiting accesses or areas within this segment. The economic benefits for this segment as measured by CS were estimated to be $1,807,948 (95% CI = [$1,364,437, $2,386,208]) by the TCM for 128,845 visits by individuals 18 years or older. The average CS per visit was estimated to be $14.03 (95% CI = [$10.59, $18.52]). From the DCM, the WTP was estimated to be $1,653,349 (95% CI = [$1,075,030, $2,282,255]) for 53,952 parties visiting within this segment. The average WTP per party was estimated to be $30.64 (95% CI = [$19.93, $42.30]).

Two catfish tournaments were held in this segment. Reported results from these tournaments included 29 boats, 57 anglers, and 456 fishing hours. These anglers caught 2 blue catfish, 15 channel catfish, and 16 flathead catfish. All fish were released.

Nebraska's Segment 3. Our access and bus-route method samples for Nebraska's Segment 3 covered the area from the mouth of the Platte River just south of Bellevue, Nebraska to N.P. Dodge Marina in N.P. Dodge Park north of Omaha, Nebraska. We estimated 166,670 (SE = 7,020) individual-visits by 92,410 (SE = 3,450) party-visits were made within Nebraska's Segment 3 during our study (Table T-25, page 240). Individual visitors spent an estimated 481,620 (SE = 34,270) hours in this segment (Table T-25, page 240). The top five activities in which users participated were boating (66,240 individual visits; SE = 4,540), sightseeing (40,060 individual-visits; SE = 3,130), exercising (14,680 individual-visits; SE = 1,660), fishing (12,420 individual-visits; SE = 1,230), and loafing (6,490 individual-visits; SE = 890). These five activities represented 83.3% (SE = 5.0%) of the estimated total number of individual-visits. Visitor fishing

success was reported in Table T-26 (page 243). No interviewed visitor reported hunting in this segment; therefore, we were unable to estimate hunting success for the segment. Estimates of visitor socio-demographic characteristics were presented in Table T-27 (page 245). An individual visitor was an average 54.5 (SE = 11.8) km (33.9 miles; SE = 7.3) from their home when visiting accesses within this segment. Economic benefits for this segment as measured by CS were estimated to be $1,490,030 (95% CI = [$931,590, $2,670,535]) by the TCM for 134,990 visits by individuals 18 years or older. The average CS per visit was estimated to be $11.04 (95% CI = [$6.90, $19.78]). From the DCM, the WTP was estimated to be $3,175,921 (95% CI = [$2,533,433, $3,829,000]) for 76,018 parties visiting within this segment. The average WTP per party was estimated to be $41.78 [95% CI = ($33.33, $50.37)].

We received additional information about campground and shelter use at Haworth Park in Bellevue, Nebraska. The manager of the park reported that 2,504 parties of campers consisting of 6,243 individuals spent 6,944 camping nights at the park from January through December 2004. In addition, the park had 11,786 shelter users during this period of time.

One catfish tournament was held in this segment. Organizers reported the tournament consisted of 34 boats and 66 anglers. Anglers fished for 594 total hours. These anglers caught 9 channel catfish and 1 flathead catfish. All fish were released.

The managers of the "River Star" excursion boat at Omaha, Nebraska reported transporting 40,797 passengers during their season from April through October 2004.

Nebraska's Segment 4. Our access method samples for Nebraska's Segment 4 covered Boyer Chute and DeSoto National Wildlife Refuges. Estimates for the Nebraska portion of the DeSoto National Wildlife Refuge were not included in these results; they are reported as a part of Nebraska's Segment 5, because data for this portion of DeSoto National Wildlife Refuge were collected using the bus-route method, which combined other minor accesses available to the public north of the refuge. It should also be noted that Boyer Chute National Wildlife Refuge was closed to the public most of the year due to work within the area and road work to its entrance. Therefore, we did not have estimates until after it opened in September 2004. We also did not start collecting data at DeSoto National Wildlife Refuge until our sampling interval that began on April 24, 2004.

We estimated 90,380 (SE = 5,020) individual-visits by 44,220 (SE = 2,510) party-visits were made within Nebraska's Segment 4 during our study (Table T-28, page 246). Individual visitors spent an estimated 247,240 (SE = 31,670) hours on these refuges (Table T-28, page 246). The top five activities in which users participated were sightseeing (44,190 individual visits; SE = 3,150), fishing (19,680 individual-visits; SE = 2,280), nature study (8,710 individual- visits; SE = 1,080), hiking (6,280 individual-visits; SE = 1,030), and biking (3,970 individual-visits; SE = 930). These five activities represented 91.6% (SE = 6.9%) of the estimated total number of individual-visits.

Visitor fishing success was reported in Table T-29 (page 249). No harvested animals were reported by hunters. Estimates of visitor socio-demographic characteristics were presented in Table T-30 (page 251). An individual visitor was an average 251.5 (SE = 34.9) km (156.3 miles; SE = 21.7) from their home when visiting these areas. The economic benefits for this segment as measured by CS were estimated to be $534,375 (95% CI = [$321,470, $770,022]) by the TCM for 67,635 visits by individuals 18 years or older. The average CS per visit was estimated to be $7.90 (95% CI = [$4.75, $11.38]). From the DCM, the WTP was estimated to be $1,471,415 (95% CI = [$1,148,991, $1,816,683]) for 36,584 parties visiting within this segment. The average WTP per party was estimated to be $40.22 (95% CI = [$31.41, $49.66]).

Nebraska's Segment 5. Our access and bus-route method samples for Nebraska's Segment 5 covered the area from Wilson Island State Park to just south of Dakota City, Nebraska, but not including the Iowa portion of DeSoto National Wildlife Refuge. This segment included estimates from the Nebraska portion of the DeSoto National Wildlife Refuge, which we collect data using the bus-route method. We were unable to collect data for the west side of the Missouri River from north of Decatur, Nebraska to south of Dakota City, Nebraska. No fishing tournaments were reported in this segment of the Missouri River.

We estimated 130,560 (SE = 8,650) individual-visits by 71,190 (SE = 4,610) party-visits were made within Nebraska's Segment 5 during our study (Table T-31, page 252). Individual visitors spent an estimated 1,213,990 (SE = 295,190) hours in this segment

(Table T-31, page 252). The top five activities in which users participated were sightseeing (28,780 individual-visits; SE = 3,370), fishing (25,380 individual-visits; SE = 2,830), boating (20,320 individual-visits; SE = 1,810), hunting (17,710 individual-visits; SE = 4,810), and camping (15,670 individual-visits; SE = 2,900). These five activities represented 82.6% (SE = 7.9%) of the estimated total number of individual-visits. Visitor fishing and hunting successes were reported in Table T-32 and Table T-33 (pages 255 and 257), respectively, and estimates of visitor socio-demographic characteristics were presented in Table T-34 (page 259). An individual visitor was an average 95.2 (SE = 21.4) km (59.2 miles; SE = 13.3) from their home when visiting accesses or areas within this segment. The economic benefits for this segment as measured by CS were estimated to be $1,924,793 (95% CI = [$1,301,053, $2,532,502]) by the TCM for 108,444 visits by individuals 18 years or older. The average CS per visit was estimated to be $17.75 (95% CI = [$12.00, $23.35]). From the DCM, the WTP was estimated to be $1,127,427 (95% CI = [$594,155, $1,640,267]) for 58,522 parties visiting within this segment. The average WTP per party was estimated to be $19.27 (95% CI = [$10.15, $28.03]).

Nebraska's Segment 6. Our access method samples for Nebraska's Segment 6 covered the Cottonwood Cove Park access at Dakota City, Nebraska, the Scenic Park access at South Sioux City, Nebraska, and the private Chris Larsen Marina and Chris Larsen Park public boat ramps at Sioux City, Iowa. These are the only public accesses, ramps and parks along the Missouri River in this segment. The Chris Larsen Marina opened on Memorial Day weekend.

We estimated 33,610 (SE = 1,780) individual-visits by 20,160 (SE = 1,110) party-visits were made within Nebraska's Segment 6 during our study (Table T-35, page 260). Individual visitors spent an estimated 90,880 (SE = 5,220) hours in this segment (Table T-35, page 260). The top five activities in which users participated were boating (15,190 individual-visits; SE = 970), fishing (5,600 individual-visits; SE = 340), exercising (5,200 individual-visits; SE = 730), sightseeing (3,120 individual-visits; SE = 440), and loafing (2,680 individual-visits; SE = 610). These five activities represented 94.6% (SE = 6.6%) of the estimated total number of individual-visits. Visitor fishing success was reported in Table T-36 (page 263). No hunting was reported for this segment; therefore, we were unable to estimate hunting success by users of this segment. Estimates of visitor socio-demographic characteristics were presented in Table T-37 (page 265). An individual visitor was an average 20.4 (SE = 2.5) km (12.6 miles; SE = 1.6) from their home when visiting accesses within this segment. The economic benefits for this segment as measured by CS were estimated to be $158,715 (95% CI = [$131,573, $179,199]) by the TCM for 28,985 visits by individuals 18 years or older. The average CS per visit was estimated to be $5.48 (95% CI = [$4.54, $6.18]). From the DCM, the WTP was estimated to be $1,120,964 (95% CI = [$985,415, $1,255,450]) for 16,905 parties visiting within this segment. The average WTP per party was estimated to be $66.31 (95% CI = [$58.29, $74.27]).

One bass tournament was held in this segment. This tournament had 58 boats with 116 participating anglers. They fished for 928 angler-hours, and caught 146 largemouth and smallmouth bass. None of these fish were kept.

The RiverBarge Excursion docked at South Sioux City, Nebraska in August 2004. One hundred eighty-one passengers disembarked and 177 passengers boarded the boat before starting on its return trip down the Missouri River.

Nebraska's Segment 7. Our access and bus-route method samples for Nebraska's Segment 7 covered the area from just upstream of the mouth of the Big Sioux River at the South Dakota/Iowa state line to Gavins Point Dam. We estimated 192,940 (SE = 12,790) individual-visits by 98,500 (SE = 5,910) party-visits were made within Nebraska's Segment 7 during our study (Table T-38, page 266). Individual visitors spent an estimated 605,560 (SE = 45,620) hours in this segment (Table T-38, page 266). The top five activities in which users participated were fishing (80,760 individual-visits; SE = 8,690), sightseeing (43,540 individual-visits; SE = 6,950), swimming (11,720 individual-visits; SE =3,920), hunting (9,130 individual-visits; SE = 5,790), and trapping (8,510 individual-visits; SE = 5,760). These five activities represented 79.6% (SE = 9.1%) of the estimated total number of individual-visits. Visitor fishing and hunting success was reported in Table T-39 and Table T-40 (pages 269 and 271), respectively, and estimates of visitor socio-demographic characteristics were presented in Table T-41 (page 273). An individual visitor was an average 105.2 (SE = 20.2) km (65.4 miles; SE = 12.5) from their home when visiting accesses within this segment. The economic benefits for this

segment as measured by CS were estimated to be $1,884,004 (95% CI = [$1,708,213, $2,074,633]) by the TCM for 166,180 visits by individuals 18 years or older. The average CS per visit was estimated to be $11.34 (95% CI = [$10.28, $12.48]). From the DCM, the WTP was estimated to be $3,899,091 (95% CI = [$2,530,134, $5,517,776]) for 85,190 parties visiting within this segment. The average WTP per party was estimated to be $45.77 (95% CI = [$29.70, $64.77]). No fishing tournaments were held in this segment.

Discussion

Public use of the Missouri River from its mouth to Gavins Point Dam was as diverse as the river. People used the Missouri River at a different intensity and in different ways depending upon the segment (Table T-42, page 274). For example, segments with greater numbers of individuals visiting per km (per mile) of river usually contained a large urban area, such as St. Charles, Washington, Jefferson City, St. Joseph, Missouri; Bellevue and Omaha, Nebraska; and Council Bluffs and Sioux City, Iowa. However, segments in which individual visitors spent more time on the river were considered more rural. Several reasons for these differences might have existed. For example, for those segments containing larger urban areas, sightseeing and loafing ranked high in the number of people engaged in these activities. Activities, such as sightseeing and loafing, were usually were short durations visits. Activities in which individuals spent more time per visit, like camping, fishing, and hunting, were associated with more rural segments, such as Fleener's Segment D, Nebraska Segment 1 (a subsegment of Fleener's Segment D), Nebraska Segment 2, and Nebraska Segment 5. However, boaters in Segment 3, an urban area covering Bellevue and Omaha, Nebraska, spent a substantial amount of time on the Missouri River. It appeared segments of the river above the Iowa-Missouri state line up to the Big Sioux River were popular with boaters. When we visited clerks along the river during the summer months, we noted a substantial number of larger and more expensive pleasure boats in these segments than in any downstream segments.

Likewise, people using different segments of the Missouri River valued the river differently (Table T-43, page 275). Such differences may be due to differing socio-

economic characteristics of populations along portions of the river, to differing characteristics of accesses and areas along the river, or differences in the river itself.

We caution users of these results in that care must be taken when combining results from different segments. For example, Nebraska Segment 1 is a subset of Fleener's Segment D, therefore, results from these segments should not be added together. Results from other segments can be added to obtain estimates for a larger desired portion of the river, but care should be given in the selection of including either Nebraska Segment 1 or Fleener's Segment D into the mix. For example, if one desired estimates of the amount of use from the Nebraska-Kansas state line down to Atchison, Kansas, results from Nebraska Segment 1 would be subtracted from corresponding results from those from Fleener's Segment D to obtain correct estimates. The variances of the corresponding estimates would also need to be subtracted and the square root of this remainder would be the correct standard error of the estimate. Also, the sum of all segments, leaving out Nebraska Segment 1, will not produce the totals given in the main body of this report because a number of accesses were not included in segment summaries covered in this Appendix in order to allow comparisons with Fleener's earlier work. For example, Maple Island Access and Mari-Osa Access were not included in our results for Fleener's Segment A, but were included as a part of our overall study results. We eliminated these two accesses from our Fleener's Segment A results to maintain comparability with Fleener's (1989) results as near as we could.

Further, we caution users of our information when making comparisons of segment results with other studies, such as Fleener's (1989) efforts. Even though we sampled all the same accesses as Fleener (1989), we included many more public accesses and areas that were not available in the 1980s. We also included many lesser used private land accesses that others may not have included in their efforts. Therefore, we may be accounting of additional or different set of public users than other studies. We recommend that users of our information make sure of these differences before making comparisons.

Specific to Fleener's (1989) effort, another complication in making comparisons between our segment information and the results reported by Fleener (1989) needs to be considered. Fleener reported "total visits," which would seem to be equivalent to our "individual-visits" from the public accesses and areas portion of our assessment. We think, however, Fleener's total number of visits was the sum of visits by activities. For instance, if a person swam and fished in one trip to the Missouri River during Fleener's study, we think that person's one trip would have been counted twice in the total number of visits. (That one trip would have counted once for swimming and once for fishing.) In our study, that one trip to the river was considered just one trip with two activities and would have been counted as one individual-visit in our estimated total. Therefore, we do not know if our estimated total of individual-visits within Fleener's river segments was an underestimate of his total visit variable, or if our estimates of individual-visits by a specific activity are an overestimate. Caution is needed in making such comparisons between our segment results and those reported by Fleener (1989).

Literature Cited

Fleener, G. G. 1989. Recreational use survey of Missouri River. Final Report. DJ Project F-1-R-38, Study S-32, Missouri Department of Conservation, Columbia, Missouri, USA.

Tables

Table T - 1. Estimates of public use for the Missouri River and its major tributaries[a] from its mouth to Jefferson City corresponding to Fleener's (1989) Segment A, except Maple Island Access and Mari-Osa Access, for the period from January 3, 2004 through January 28, 2005.

	Individual- Visits			Hours			Average	
Activity	Estimate	Standard Error	Percent	Estimate	Standard Error	Percent	Length of Visits (Hrs)	Standard Error
Fishing								
Rod/Reel - Non-tournament	80,870	9,060	16.16	241,870	25,790	22.51	2.99	0.46
Oth. Methods - Non-tournament	26,490	2,550	5.30	48,720	3,880	4.53	1.84	0.23
Rod/Reel & Oth. Meths. - Non-tour.	1,900	440	0.38	10,080	3,170	0.94	5.31	2.07
Rod/Reel – Tournament	230	120	0.05	1,580	840	0.15	6.85	5.16
Oth. Methods – Tournament	80	50	0.02	240	110	0.02	2.87	2.01
Rod/Reel & Oth. Meths. - Tour.	35	35	0.01	35	35	0.00	1.00	1.41
Commercial	1,730	610	0.35	5,340	3,040	0.50	3.09	2.07
Snagging Paddlefish (Nebraska)	11	10	0.00	70	60	0.01	6.00	7.48
Collecting Bait	880	280	0.18	1,030	440	0.10	1.17	0.62
Fishing Subtotal	**110,550**	**9,540**	**22.10**	**308,960**	**26,620**	**28.75**	**2.79**	**0.34**
Hunting								
Deer, gun or muzzleloader	1,620	760	0.32	12,790	8,270	1.19	7.89	6.31
Deer, bow	1,020	190	0.20	5,590	1,120	0.52	5.48	1.49
Turkey	580	230	0.12	2,750	870	0.26	4.73	2.42
Waterfowl	3,570	860	0.71	19,600	4,790	1.82	5.48	1.88
Dove	3,010	670	0.60	10,090	2,640	0.94	3.35	1.15
Squirrel	60	27	0.01	260	150	0.02	4.13	2.91
Rabbit	80	50	0.02	360	210	0.03	4.48	3.58
Quail	14	9	0.00	34	21	0.00	2.43	2.06
Pheasant	0	0	0.00	0	0	0.00	--	--
Crow	50	20	0.01	120	70	0.01	2.45	1.84
Raccoon	19	14	0.00	26	19	0.00	1.37	1.38
Fox	0	0	0.00	0	0	0.00	--	--
Predator	60	50	0.01	60	38	0.01	1.00	1.01
Other Hunting	200	180	0.04	820	760	0.08	4.20	5.52
Hunting Subtotal	**10,160**	**1,370**	**2.03**	**52,510**	**10,060**	**4.89**	**5.17**	**1.21**

Table T - 1. Continued.

Activity	Individual-Visits Estimate	Individual-Visits Standard Error	Individual-Visits Percent	Hours Estimate	Hours Standard Error	Hours Percent	Average Length of Visits (Hrs)	Standard Error
Trapping	140	33	0.027384	430	110	0.040202	3.153285	1.08
Frogging	29	27	0.005797	22	20	0.002047	0.758621	0.98
Non-Consumptive Activities								
Camping, dept. site	870	490	0.174299	25,710	14,800	2.392126	29.47821	23.73
Camping, other	10,120	5,810	2.022023	206,100	127,720	19.17954	20.37337	17.22
Picnicking, dept. site	3,030	350	0.605248	2,390	320	0.222694	0.790291	0.14
Picnicking, other	8,980	1,550	1.795155	9,200	1,600	0.856252	1.024496	0.25
Swimming	4,780	1,030	0.955444	7,760	1,550	0.722337	1.623849	0.48
Floating	470	150	0.094745	1,390	430	0.129727	2.940928	1.28
Boating	74,470	11,490	14.88494	157,890	20,890	14.69299	2.120186	0.43
Canoeing	5,810	1,540	1.161924	42,560	17,360	3.9602	7.320661	3.56
Nature Study	11,380	1,440	2.275476	8,350	1,000	0.777429	0.733837	0.13
Loafing	22,640	1,800	4.526166	17,790	2,090	1.655364	0.78555	0.11
Sightseeing	162,270	6,530	32.43472	95,720	4,630	8.907588	0.589876	0.04
Cottage Use	130	70	0.025585	100	50	0.009213	0.773438	0.6
Off-road Vehicle	1,500	540	0.299826	2,390	1,340	0.222508	1.594	1.06
Gathering Products	12,590	4,540	2.516535	14,740	3,360	1.371994	1.171009	0.5
Target Shooting	580	360	0.115733	1,160	780	0.107764	2	1.85
Rappelling	510	330	0.101541	180	90	0.01703	0.360236	0.3
Caving	8	8	0.001599	16	16	0.001489	2	2.83
Waterskiing	660	170	0.132523	1,160	340	0.107578	1.74359	0.67
Biking	19,590	6,360	3.916521	22,230	6,120	2.068368	1.134327	0.48
Jet Skiing	3,030	510	0.604648	7,560	1,690	0.703539	2.499174	0.7
Sunbathing	230	90	0.046373	450	170	0.041505	1.922414	1.04
Partying	1,350	420	0.270642	3,190	750	0.297143	2.358198	0.92
Hiking	4,940	1,550	0.987026	4,010	870	0.372708	0.811057	0.31
Exercising	53,470	6,480	10.68678	49,450	6,410	4.601854	0.924904	0.16
Preparing for Hunting Season	5,040	1,050	1.006814	8,720	3,210	0.81149	1.731189	0.73
Tuning (or trying out) Boat and Motor	5,630	850	1.125945	5,360	890	0.499178	0.952246	0.21

Table T - 1. Continued.

Activity	Individual-Visits Estimate	Individual-Visits Standard Error	Individual-Visits Percent	Hours Estimate	Hours Standard Error	Hours Percent	Average Length of Visits (Hrs)	Standard Error
Lewis and Clark Event and Trail Tour	940	330	0.186891	3,420	1,780	0.318361	3.658824	2.3
Photography	3,980	1,210	0.795537	1,920	450	0.178677	0.482412	0.18
Playground/Telephone/Restroom	3,380	1,260	0.675007	1,060	350	0.098644	0.313888	0.16
Sporting Activities	1,060	710	0.212276	670	270	0.062258	0.629944	0.49
Dog Training	26	24	0.005197	13	12	0.00121	0.5	0.64
Observed Paddlefish Snagging	0	0	0	0	0	0	--	--
Geocaching	190	110	0.037178	60	30	0.005398	0.311828	0.24
Education Tour	130	130	0.026585	970	930	0.08999	7.270677	9.87
Oregon & Calif. Trail Tour	0	0	0	0	0	0	--	--
Horseback Riding	0	0	0	0	0	0	--	--
Fireworks	0	0	0	0	0	0	--	--
Ice Skating	10	9	0.001999	15	14	0.001396	1.5	2
Arts & Crafts	1,430	1,350	0.286233	2,840	2,710	0.264013	1.981145	2.66
Releasing Wildlife	180	150	0.035379	40	40	0.004095	0.248588	0.31
Model Airplane Flying	100	90	0.019189	190	170	0.017868	2	2.53
Motorcycling	0	0	0	0	0	0	--	--
MO River Relief	30	20	0.005397	4,490	3,800	0.417843	166.2963	200.89
Non-Consumptive Activities Subtotal	**389,840**	**17,830**	**77.92185**	**711,250**	**144,750**	**66.18945**	**1.824485**	**0.38**
Undefined Use	1,590	340	0.318215	1,270	320	0.11828	0.798367	0.26
Work Trip	150	60	0.030382	130	50	0.012377	0.875	0.49
Unknown	80	100	0.01679	130	150	0.011726	1.5	2.44
Overall Total	**500,290**	**21,230**	**100**	**1,074,570**	**148,630**	**100**	**2.147884**	**0.31**

[a] Tributaries included in these results were the lower Gasconade River to just above Gascony Village, and the lower Osage River up to Mari-Osa Access, except when Mari-Osa Access was not combined with Bonnets Mill Access for sampling purposes.

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Table T - 2. Estimates of successful parties, number of fish caught, number of fish harvested and the harvest rate for different fish species taken from the Missouri River and its major tributaries[a] from its mouth to Jefferson City corresponding to Fleener's (1989) Segment A, except Maple Island Access and Mari-Osa Access, for the period from January 3, 2004 through January 28, 2005.

Species	Successful Parties	Standard Error	Total Catch	Standard Error	Total Harvest	Standard Error	Harvest Rate (per 100 Hrs)	Standard Error
Paddlefish	410	250	1,180	560	750	510	0.24	0.17
Lake Sturgeon	80	29	100	36	0	0	0.00	0.00
Shovelnose Sturgeon	650	260	8,350	3,630	1,050	370	0.34	0.12
Pallid Sturgeon	29	12	38	17	0[b]	0[b]	0.00[b]	0.00[b]
Shortnose Gar	200	60	610	220	100	70	0.03	0.02
Spotted Gar	6	5	51	42	0	0	0.00	0.00
Longnose Gar	480	110	810	190	200	120	0.06	0.04
Gar sp/pref	3	3	18	17	18	17	0.01	0.01
Bowfin	0	0	0	0	0	0	0.00	0.00
Goldeye	21	12	70	50	60	40	0.02	0.01
Skipjack Herring	40	20	280	150	180	140	0.06	0.04
Gizzard Shad	60	30	1,000	750	970	740	0.31	0.24
Threadfin Shad	15	14	90	80	0	0	0.00	0.00
Trout sp/pref	0	0	0	0	0	0	0.00	0.00
Bigmouth Buffalo	190	50	990	420	960	420	0.31	0.14
Black Buffalo	130	33	2,160	1,290	2,130	1,290	0.69	0.42
Smallmouth Buffalo	310	160	3,990	2,980	3,980	2,980	1.29	0.97
Buffalo sp/pref	0	0	0	0	0	0	0.00	0.00
Quillback	24	12	140	90	140	90	0.05	0.03
River Carpsucker	8	7	50	50	50	50	0.02	0.02
Highfin Carpsucker	0	0	0	0	0	0	0.00	0.00
Carpsucker sp	0	0	0	0	0	0	0.00	0.00
Blue Sucker	2,320	2,270	2,520	2,270	180	130	0.06	0.04
White Sucker	0	0	0	0	0	0	0.00	0.00
Shorthead Redhorse	8	7	8	7	4	4	0.00	0.00
Carp	960	160	3,660	1,100	2,310	1,040	0.75	0.34
Grass Carp	110	34	340	120	100	40	0.03	0.01
Silver Carp	320	270	340	270	50	28	0.02	0.01
Bighead Carp	590	180	7,350	3,570	5,640	3,350	1.82	1.10

Table T - 2. Continued.

Species	Successful Parties	Standard Error	Total Catch	Standard Error	Total Harvest	Standard Error	Harvest Rate (per 100 Hrs)	Standard Error
Channel Catfish	20,550	4,450	75,760	25,050	23,820	6,170	7.71	2.10
Blue Catfish	9,310	840	25,960	2,420	15,260	1,600	4.94	0.67
Catfish sp/pref	27	15	100	70	20	15	0.01	0.00
Black Bullhead	31	14	240	120	110	90	0.03	0.03
Yellow Bullhead	36	19	70	34	23	17	0.01	0.01
Brown Bullhead	6	4	6	4	6	4	0.00	0.00
Bullhead sp/pref	0	0	0	0	0	0	0.00	0.00
Flathead Catfish	3,740	420	6,510	640	3,990	430	1.29	0.18
Grass Pickerel	0	0	0	0	0	0	0.00	0.00
Northern Pike	19	18	19	18	19	18	0.01	0.01
Eel	100	100	100	100	0	0	0.00	0.00
White Perch	1,210	500	2,250	890	2,030	860	0.66	0.28
White Bass	380	80	2,300	730	1,340	490	0.43	0.16
Striped Bass Hybrid	70	24	150	70	40	20	0.01	0.01
Yellow Bass	12	8	12	8	5	5	0.00	0.00
Striped Bass	21	11	29	14	9	9	0.00	0.00
Sauger	60	21	220	120	110	50	0.04	0.02
Walleye	80	26	210	70	120	50	0.04	0.02
Spotted Bass	5	5	11	10	0	0	0.00	0.00
Smallmouth Bass	50	29	160	130	0	0	0.00	0.00
Largemouth Bass	230	60	1,010	380	40	30	0.01	0.01
Warmouth	0	0	0	0	0	0	0.00	0.00
Green Sunfish	0	0	0	0	0	0	0.00	0.00
Bluegill	90	28	340	130	230	120	0.07	0.04
Black Crappie	200	50	2,450	1,040	1,570	680	0.51	0.23
White Crappie	80	27	350	200	270	160	0.09	0.05
Crappie sp/pref	0	0	0	0	0	0	0.00	0.00
Freshwater Drum	7,950	2,930	25,530	13,950	4,310	1,830	1.39	0.60
Fishing/anything	120	40	350	150	170	90	0.06	0.03
Fish Total	**56,350**	**4,750**	**178,290**	**29,580**	**72,340**	**8,350**	**23.42**	**3.37**

[a] Tributaries included in these results were the lower Gasconade River to just above Gascony Village, and the lower Osage River up to Mari-Osa Access, except when Mari-Osa Access was not combined with Bonnets Mill Access for sampling purposes.

[b] Species is listed as a federal endangered species under the Endangered Species Act, therefore, harvest of this species was not legal. Estimate of harvest reflects what the survey clerk recorded as being reported by the interviewed public user.

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Table T - 3. Estimates of successful hunting parties, number of wildlife shot, number harvested and the harvest rate for different wildlife species taken by hunters on the Missouri River and its major tributaries[a] from its mouth to Jefferson City corresponding to Fleener's (1989) Segment A, except Maple Island Access and Mari-Osa Access, for the period from January 3, 2004 through January 28, 2005.

Species	Successful Parties	Standard Error	Total Shot	Standard Error	Total Harvest	Standard Error	Harvest Rate (per 100 Hrs)	Standard Error
White-tailed Deer	370	200	440	200	440	200	0.83	0.42
Squirrel	20	8	210	130	210	130	0.40	0.27
Rabbit	17	11	40	30	40	30	0.08	0.06
Raccoon	32	10	70	23	70	23	0.13	0.05
Beaver	18	9	36	20	36	20	0.07	0.04
Mink	0	0	0	0	0	0	0.00	0.00
Bobcat	0	0	0	0	0	0	0.00	0.00
Red Fox	0	0	0	0	0	0	0.00	0.00
Opossum	24	8	30	11	30	11	0.06	0.02
Coyote	10	6	15	8	15	8	0.03	0.02
Mourning Dove	1,160	350	13,160	4,760	13,160	4,760	25.06	10.26
Bobwhite Quail	0	0	0	0	0	0	0.00	0.00
Crow	11	11	90	90	90	90	0.17	0.17
Turkey	230	220	230	220	230	220	0.44	0.42
Pheasant	0	0	0	0	0	0	0.00	0.00
Mallard	160	50	270	80	270	80	0.52	0.18
Wigeon	4	3	4	3	4	3	0.01	0.01
Blue-Winged Teal	39	37	39	37	39	37	0.07	0.07
Green-Winged Teal	11	6	28	18	28	18	0.05	0.04
Pintail	7	7	7	7	7	7	0.01	0.01
Shoveler	0	0	0	0	0	0	0.00	0.00
Gadwall	31	21	60	40	60	40	0.11	0.08
Wood Duck	39	37	39	37	39	37	0.07	0.07
Redhead	0	0	0	0	0	0	0.00	0.00
Ring-Necked Duck	5	4	5	4	5	4	0.01	0.01
Greater Scaup	0	0	0	0	0	0	0.00	0.00
Lesser Scaup	16	15	100	90	100	90	0.18	0.17
Goldeneye	0	0	0	0	0	0	0.00	0.00
Bufflehead	11	11	23	22	23	22	0.04	0.04

Table T - 3. Continued.

Species	Successful Parties	Standard Error	Total Shot	Standard Error	Total Harvest	Standard Error	Harvest Rate (per 100 Hrs)	Standard Error
Common Merganser	0	0	0	0	0	0	0.00	0.00
Other Ducks	0	0	0	0	0	0	0.00	0.00
Canada Goose	80	28	330	130	330	130	0.64	0.28
Snow Goose	0	0	0	0	0	0	0.00	0.00
Ross Goose	0	0	0	0	0	0	0.00	0.00
Coot	0	0	0	0	0	0	0.00	0.00
Woodcock	0	0	0	0	0	0	0.00	0.00
Turtle	120	40	190	70	12	10	0.02	0.02
Clam	7	6	7	6	7	6	0.01	0.01
Hunting/Unknown	3	3	37	32	37	32	0.07	0.06
Hunting Total	**5,780**	**770**	**15,450**	**4,780**	**15,280**	**4,780**	**29.10**	**10.67**
Frog	0	0	0	0	0	0	0.00	0.00
Frogging Total	**10**	**9**	**0**	**0**	**0**	**0**	**0.00**	**0.02**

[a] Tributaries included in these results were the lower Gasconade River to just above Gascony Village, and the lower Osage River up to Mari-Osa Access, except when Mari-Osa Access was not combined with Bonnets Mill Access for sampling purposes.

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Table T - 4. Socio-demographic characteristics of users of the Missouri River and its major tributaries from its mouth to Jefferson City corresponding to Fleener's (1989) Segment A, except Maple Island Access and Mari-Osa Access, for the period from January 3, 2004 through January 28, 2005. Return to page 171.

Characteristic	Estimate	Standard Error	Percent
Age			
0-11 Years Old	35,420	3,690	7.08
12-15 Years Old	19,550	3,630	3.91
16-17 Years Old	11,480	2,850	2.29
18-24 Years Old	39,510	3,530	7.90
25-34 Years Old	71,200	7,650	14.23
35-44 Years Old	92,670	5,850	18.52
45-64 Years Old	162,460	10,260	32.47
65 or Older	65,310	4,540	13.05
Unknown Age	2,700	1,140	0.54
Gender			
Male	358,710	15,760	71.70
Female	140,760	8,720	28.14
Unknown Gender	820	260	0.16
Race			
White	456,090	20,350	91.16
Black or African-American	35,750	4,010	7.15
Hispanic or Latino	2,620	1,060	0.52
Asian	1,600	330	0.32
American Indian	560	180	0.11
Other	770	220	0.15
Unknown race	2,910	1,050	0.58
Impairment			
No Impairment	457,850	19,830	91.52
Hearing Impaired	5,640	1,330	1.13
Visually Impaired	1,400	350	0.28
Learning Impaired	2,760	1,210	0.55
Mobility Impaired	11,460	1,950	2.29
Other Impairment	16,650	3,460	3.33
Unknown Impairment Status	4,540	1,090	0.91
Permit Ownership			
Owned a fishing or Hunting Permit	228,870	12,880	45.75
Did Not own a fishing or hunting permit	264,430	14,070	52.85
Unknown permit ownership status	6,990	3,020	1.40

Table T - 5. Estimates of public use for the Missouri River and its major tributary[a] from Jefferson City to just downstream of Miami, Missouri corresponding to Fleener's (1989) Segment B for the period from January 3, 2004 through January 28, 2005.

	Individual-Visits			Hours			Average Length of Visits (Hrs)	Standard Error
Activity	Estimate	Standard Error	Percent	Estimate	Standard Error	Percent		
Fishing								
Rod/Reel - Non-tournament	42,230	5,790	23.92	137,530	22,470	18.65	3.3	0.69
Oth. Methods - Non-tournament	26,250	3,440	14.87	92,840	17,980	12.59	3.5	0.83
Rod/Reel & Oth. Meths. - Non-tour.	490	100	0.28	4,970	2,580	0.67	10.1	5.62
Rod/Reel - Tournament	0	0	0.00	0	0	0.00	--	--
Oth. Methods - Tournament	14	11	0.01	40	28	0.01	2.9	2.90
Rod/Reel & Oth. Meths. - Tour.	0	0	0.00	0	0	0.00	--	--
Commercial	690	270	0.39	1,540	450	0.21	2.2	1.10
Snagging Paddlefish (Nebraska)	3	2	0.00	20	19	0.00	6.7	10.34
Collecting Bait	110	60	0.06	90	40	0.01	0.8	0.65
Fishing Subtotal	**69,560**	**6,860**	**39.40**	**237,030**	**29,030**	**32.14**	**3.4**	**0.54**
Hunting								
Deer, gun or muzzleloader	250	60	0.14	1,810	670	0.25	7.2	3.17
Deer, bow	2,110	580	1.20	22,950	6,870	3.11	10.9	4.40
Turkey	120	30	0.07	780	290	0.11	6.5	3.10
Waterfowl	780	120	0.44	3,540	590	0.48	4.5	1.03
Dove	22	14	0.01	37	27	0.01	1.7	1.59
Squirrel	0	0	0.00	0	0	0.00	--	--
Rabbit	1,700	670	0.96	1,690	670	0.23	1.0	0.56
Quail	0	0	0.00	0	0	0.00	--	--
Pheasant	0	0	0.00	0	0	0.00	--	--
Crow	0	0	0.00	0	0	0.00	--	--
Raccoon	0	0	0.00	0	0	0.00	--	--
Fox	0	0	0.00	0	0	0.00	--	--
Predator	0	0	0.00	0	0	0.00	--	--
Other Hunting	0	0	0.00	0	0	0.00	--	--
Hunting Subtotal	**4,970**	**900**	**2.82**	**30,820**	**6,960**	**4.18**	**6.20**	**1.79**

Table T - 5. Continued.

Activity	Individual-Visits Estimate	Individual-Visits Standard Error	Individual-Visits Percent	Hours Estimate	Hours Standard Error	Hours Percent	Average Length of Visits (Hrs)	Standard Error
Trapping	150	40	0.08	590	170	0.08	3.9	1.56
Frogging	0	0	0.00	0	0	0.00	--	--
Non-Consumptive Activities								
Camping, dept. site	2,040	1,100	1.16	42,340	21,860	5.74	20.8	15.49
Camping, other	6,470	1,870	3.66	260,180	100,640	35.28	40.2	19.40
Picnicking, dept. site	410	120	0.23	350	120	0.05	0.9	0.38
Picnicking, other	8,890	3,270	5.04	7,770	2,030	1.05	0.9	0.39
Swimming	720	130	0.41	1,460	400	0.20	2.0	0.67
Floating	360	100	0.20	1,600	520	0.22	4.4	1.90
Boating	12,150	1,350	6.88	38,260	4,220	5.19	3.1	0.49
Canoeing	2,950	1,850	1.67	10,600	4,350	1.44	3.6	2.70
Nature Study	4,030	1,510	2.28	4,790	2,170	0.65	1.2	0.70
Loafing	11,930	2,480	6.76	27,510	17,790	3.73	2.3	1.57
Sightseeing	46,440	6,200	26.30	30,380	3,380	4.12	0.7	0.11
Cottage Use	37	25	0.02	170	100	0.02	4.6	4.19
Off-road Vehicle	100	39	0.06	130	50	0.02	1.3	0.70
Gathering Products	4,000	1,000	2.27	8,240	2,340	1.12	2.1	0.78
Target Shooting	980	910	0.56	980	910	0.13	1.0	1.32
Rappelling	22	20	0.01	60	50	0.01	2.7	3.52
Caving	0	0	0.00	0	0	0.00	--	--
Waterskiing	80	37	0.05	120	60	0.02	1.5	1.15
Biking	1,290	1,120	0.73	7,050	6,690	0.96	5.5	7.02
Jet Skiing	480	100	0.27	1,300	310	0.18	2.7	0.86
Sunbathing	40	20	0.02	110	70	0.01	2.8	2.19
Partying	690	130	0.39	2,650	620	0.36	3.8	1.17
Hiking	2,010	1,520	1.14	1,480	780	0.20	0.7	0.68
Exercising	1,980	530	1.12	1,590	360	0.22	0.8	0.28
Preparing for Hunting Season	1,880	980	1.06	4,920	2,740	0.67	2.6	2.00
Tuning (or trying out) Boat and Motor	6,820	3,890	3.86	8,530	5,730	1.16	1.3	1.10

Table T - 5. Continued.

Activity	Individual-Visits Estimate	Individual-Visits Standard Error	Individual-Visits Percent	Hours Estimate	Hours Standard Error	Hours Percent	Average Length of Visits (Hrs)	Standard Error
Lewis and Clark Event and Trail Tour	280	100	0.16	1,700	870	0.23	6.1	3.70
Photography	3,340	1,500	1.89	1,850	730	0.25	0.6	0.33
Playground/Telephone/Restroom	980	480	0.56	440	150	0.06	0.4	0.27
Sporting Activities	320	150	0.18	570	290	0.08	1.8	1.21
Dog Training	0	0	0.00	0	0	0.00	--	--
Observed Paddlefish Snagging	0	0	0.00	0	0	0.00	--	--
Geocaching	70	50	0.04	50	26	0.01	0.7	0.64
Education Tour	0	0	0.00	0	0	0.00	--	--
Oregon & Calif. Trail Tour	0	0	0.00	0	0	0.00	--	--
Horseback Riding	0	0	0.00	0	0	0.00	--	--
Fireworks	360	360	0.20	720	720	0.10	2.0	2.83
Ice Skating	0	0	0.00	0	0	0.00	--	--
Arts & Crafts	0	0	0.00	0	0	0.00	--	--
Releasing Wildlife	0	0	0.00	0	0	0.00	--	--
Model Airplane Flying	0	0	0.00	0	0	0.00	--	--
Motorcycling	0	0	0.00	0	0	0.00	--	--
MO River Relief	20	17	0.01	33	29	0.00	1.7	2.08
Non-Consumptive Activities Subtotal	**107,150**	**9,600**	**60.69**	**467,920**	**111,880**	**63.44**	**4.4**	**1.12**
Undefined Use	400	260	0.23	1,180	1,080	0.16	3.0	3.32
Work Trip	780	720	0.44	320	210	0.04	0.4	0.46
Unknown	0	0	0.00	0	0	0.00	--	--
Overall Total	**176,550**	**12,170**	**100.00**	**737,530**	**119,570**	**100.00**	**4.2**	**0.74**

[a] The tributary included in these results was the Lamine River up to De Bourgmont Access.

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Table T - 6. Estimates of successful parties, number of fish caught, number of fish harvested and the harvest rate for different fish species taken from the Missouri River and its major tributary[a] from Jefferson City to just downstream of Miami, Missouri corresponding to Fleener's (1989) Segment B for the period from January 3, 2004 through January 28, 2005.

Species	Successful Parties	Standard Error	Total Catch	Standard Error	Total Harvest	Standard Error	Harvest Rate (per 100 Hrs)	Standard Error
Paddlefish	36	14	60	24	29	13	0.01	0.01
Lake Sturgeon	19	9	19	9	0	0	0.00	0.00
Shovelnose Sturgeon	400	260	1,920	1,570	32	28	0.01	0.01
Pallid Sturgeon	40	15	60	19	12[b]	8[b]	0.01[b]	0.00[b]
Shortnose Gar	90	21	250	80	16	9	0.01	0.00
Spotted Gar	0	0	0	0	0	0	0.00	0.00
Longnose Gar	710	440	2,010	1,340	80	30	0.04	0.01
Gar sp/pref	0	0	0	0	0	0	0.00	0.00
Bowfin	0	0	0	0	0	0	0.00	0.00
Goldeye	10	10	19	19	0	0	0.00	0.00
Skipjack Herring	13	8	13	8	6	5	0.00	0.00
Gizzard Shad	7	7	7	7	0	0	0.00	0.00
Threadfin Shad	0	0	0	0	0	0	0.00	0.00
Trout sp/pref	0	0	0	0	0	0	0.00	0.00
Bigmouth Buffalo	170	40	1,890	530	1,890	530	0.80	0.24
Black Buffalo	80	32	770	340	770	340	0.32	0.15
Smallmouth Buffalo	380	270	5,520	3,370	5,510	3,370	2.33	1.45
Buffalo sp/pref	3	3	10	9	10	9	0.00	0.00
Quillback	270	260	1,580	1,570	1,580	1,570	0.67	0.67
River Carpsucker	0	0	0	0	0	0	0.00	0.00
Highfin Carpsucker	0	0	0	0	0	0	0.00	0.00
Carpsucker sp	0	0	0	0	0	0	0.00	0.00
Blue Sucker	9	6	9	6	3	3	0.00	0.00
White Sucker	0	0	0	0	0	0	0.00	0.00
Shorthead Redhorse	0	0	0	0	0	0	0.00	0.00
Carp	720	220	3,910	1,030	3,350	1,000	1.41	0.46
Grass Carp	81	32	260	170	220	170	0.09	0.07
Silver Carp	29	11	34	13	21	10	0.01	0.00
Bighead Carp	220	40	1,950	700	890	470	0.38	0.20

Table T - 6. Continued.

Species	Successful Parties	Standard Error		Total Catch	Standard Error		Total Harvest	Standard Error	Harvest Rate (per 100 Hrs)	Standard Error
Channel Catfish	10,750	2,030	0	36,460	6,950	0	24,780	5,310	10.45	2.58
Blue Catfish	8,810	1,900	0	17,810	3,200	0	10,470	2,260	4.42	1.10
Catfish sp/pref	0	0		0	0		0	0	0.00	0.00
Black Bullhead	36	18		90	60		40	22	0.02	0.01
Yellow Bullhead	23	11		23	11		12	8	0.01	0.00
Brown Bullhead	0	0		0	0		0	0	0.00	0.00
Bullhead sp/pref	0	0		0	0		0	0	0.00	0.00
Flathead Catfish	6,280	1,290		10,360	2,490		8,630	1,930	3.64	0.93
Grass Pickerel	0	0		0	0		0	0	0.00	0.00
Northern Pike	0	0		0	0		0	0	0.00	0.00
Eel	3	3		3	3		0	0	0.00	0.00
White Perch	22	9		27	12		0	0	0.00	0.00
White Bass	21	11		38	21		29	16	0.01	0.01
Striped Bass Hybrid	0	0		0	0		0	0	0.00	0.00
Yellow Bass	0	0		0	0		0	0	0.00	0.00
Striped Bass	5	5		5	5		0	0	0.00	0.00
Sauger	0	0		0	0		0	0	0.00	0.00
Walleye	0	0		0	0		0	0	0.00	0.00
Spotted Bass	0	0		0	0		0	0	0.00	0.00
Smallmouth Bass	0	0		0	0		0	0	0.00	0.00
Largemouth Bass	23	9		50	22		34	20	0.01	0.01
Warmouth	0	0		0	0		0	0	0.00	0.00
Green Sunfish	0	0		0	0		0	0	0.00	0.00
Bluegill	12	7		23	15		10	13	0.00	0.01
Black Crappie	22	12		45	24		35	22	0.01	0.01
White Crappie	11	6		100	65		66	38	0.03	0.02
Crappie sp/pref	12	11		12	11		12	11	0.01	0.00
Freshwater Drum	2,180	1,290		2,870	1,320		1,520	1,270	0.64	0.54
Fishing/anything	40	14		80	40		24	10	0.01	0.00
Fish Total	**33,790**	**3,320**		**88,280**	**9,300**		**60,080**	**7,350**	**25.35**	**4.39**

[a] The tributary included in these results was the Lamine River up to De Bourgmont Access.

[b] Species is listed as a federal endangered species under the Endangered Species Act, therefore, harvest of this species was not legal. Estimate of harvest reflects what the survey clerk recorded as being reported by the interviewed public user. Return to page 173.

Table T - 7. Estimates of successful hunting parties, number of wildlife shot, number harvested and the harvest rate for different wildlife species taken by hunters on the Missouri River and its major tributary[a] from Jefferson City to just downstream of Miami, Missouri corresponding to Fleener's (1989) Segment B for the period from January 3, 2004 through January 28, 2005.

Species	Successful Parties	Standard Error	Total Shot	Standard Error	Total Harvest	Standard Error	Harvest Rate (per 100 Hrs)	Standard Error
White-tailed Deer	930	900	950	900	950	900	3.09	2.99
Squirrel	0	0	0	0	0	0	0.00	0.00
Rabbit	4	3	4	3	4	3	0.01	0.01
Raccoon	26	11	140	90	140	90	0.47	0.31
Beaver	4	3	50	39	50	39	0.16	0.13
Mink	0	0	0	0	0	0	0.00	0.00
Bobcat	0	0	0	0	0	0	0.00	0.00
Red Fox	6	5	6	5	6	5	0.02	0.02
Opossum	5	4	9	8	9	8	0.03	0.03
Coyote	6	5	6	5	6	5	0.02	0.02
Mourning Dove	10	9	80	70	80	70	0.27	0.24
Bobwhite Quail	0	0	0	0	0	0	0.00	0.00
Crow	0	0	0	0	0	0	0.00	0.00
Turkey	4	4	4	4	4	4	0.01	0.01
Pheasant	0	0	0	0	0	0	0.00	0.00
Mallard	70	20	180	50	180	50	0.57	0.21
Wigeon	0	0	0	0	0	0	0.00	0.00
Blue-Winged Teal	4	4	9	8	9	8	0.03	0.03
Green-Winged Teal	13	6	50	35	50	35	0.17	0.12
Pintail	3	3	3	3	3	3	0.01	0.01
Shoveler	5	4	5	4	5	4	0.02	0.01
Gadwall	8	5	13	9	13	9	0.04	0.03
Wood Duck	6	5	24	21	24	21	0.08	0.07
Redhead	0	0	0	0	0	0	0.00	0.00
Ring-Necked Duck	3	3	3	3	3	3	0.01	0.01
Greater Scaup	0	0	0	0	0	0	0.00	0.00
Lesser Scaup	0	0	0	0	0	0	0.00	0.00
Goldeneye	4	3	7	5	7	5	0.02	0.02
Bufflehead	0	0	0	0	0	0	0.00	0.00

Table T - 7. Continued.

Species	Successful Parties	Standard Error	Total Catch	Standard Error	Total Harvest	Standard Error	Harvest Rate (per 100 Hrs)	Standard Error
Common Merganser	0	0	0	0	0	0	0.00	0.00
Other Ducks	0	0	0	0	0	0	0.00	0.00
Canada Goose	36	15	39	16	39	16	0.13	0.06
Snow Goose	0	0	0	0	0	0	0.00	0.00
Ross Goose	0	0	0	0	0	0	0.00	0.00
Coot	0	0	0	0	0	0	0.00	0.00
Woodcock	0	0	0	0	0	0	0.00	0.00
Turtle	21	12	21	12	0	0	0.00	0.00
Clam	0	0	0	0	0	0	0.00	0.00
Hunting/Unknown	0	0	0	0	0	0	0.00	0.00
Hunting Total	3,420	1,000	1,610	910	1,590	910	**5.14**	**3.17**
Frog	0	0	0	0	0	0	0.00	0.00
Frogging Total	**0**	**0**	**0**	**0**	**0**	**0**	**0.00**	**0.00**

[a] The tributary included in these results was the Lamine River up to De Bourgmont Access.

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Table T - 8. Socio-demographics of users of the Missouri River and the lower Lamine River from Jefferson City to just downstream of Miami, Missouri corresponding to Fleener's (1989) Segment B for the period from January 3, 2004 through January 28, 2005. Return to page 173.

Characteristic	Estimate	Standard Error	Percent
Age			
0-11 Years Old	13,410	2,040	7.59
12-15 Years Old	4,720	1,160	2.67
16-17 Years Old	1,860	520	1.05
18-24 Years Old	21,290	3,150	12.06
25-34 Years Old	31,910	4,480	18.08
35-44 Years Old	34,680	3,740	19.64
45-64 Years Old	53,830	5,150	30.49
65 or Older	12,470	2,280	7.06
Unknown Age	2,380	970	1.35
Gender			
Male	130,770	9,800	74.07
Female	43,780	4,590	24.80
Unknown Gender	1,990	640	1.13
Race			
White	161,630	11,570	91.55
Black or African-American	9,760	2,430	5.53
Hispanic or Latino	730	440	0.41
Asian	1,240	900	0.70
American Indian	140	30	0.08
Other	990	830	0.56
Unknown race	2,060	640	1.17
Impairment			
No Impairment	160,100	11,500	90.68
Hearing Impaired	1,620	920	0.92
Visually Impaired	340	210	0.19
Learning Impaired	660	500	0.37
Mobility Impaired	4,080	1,180	2.31
Other Impairment	6,250	1,810	3.54
Unknown Impairment Status	3,500	890	1.98
Permit Ownership			
Owned a fishing or Hunting Permit	98,410	8,340	55.74
Did Not own a fishing or hunting permit	75,470	6,940	42.75
Unknown permit ownership status	2,670	1,050	1.51

Table T - 9. Estimates of public use for the Missouri River and its major tributaries[a] from just downstream of Miami, Missouri to Atchison, Kansas corresponding to Fleener's (1989) Segment C for the period from January 3, 2004 through January 28, 2005.

	Individual-Visits			Hours			Average	
Activity	Estimate	Standard Error	Percent	Estimate	Standard Error	Percent	Length of Visits (Hrs)	Standard Error
Fishing								
Rod/Reel - Non-tournament	38,260	4,910	17.27	117,740	12,460	30.28	3.1	0.51
Oth. Methods - Non-tournament	10,630	1,910	4.80	24,450	3,640	6.29	2.3	0.54
Rod/Reel & Oth. Meths. - Non-tour.	1,480	540	0.67	6,720	1,820	1.73	4.5	2.08
Rod/Reel - Tournament	10	9	0.00	100	90	0.03	10.0	13.72
Oth. Methods - Tournament	8	11	0.00	2	3	0.00	0.3	0.44
Rod/Reel & Oth. Meths. - Tour.	0	0	0.00	0	0	0.00	--	--
Commercial	230	80	0.10	730	230	0.19	3.2	1.53
Snagging Paddlefish (Nebraska)	0	0	0.00	0	0	0.00	--	--
Collecting Bait	110	38	0.05	110	40	0.03	1.0	0.54
Fishing Subtotal	**50,550**	**5,290**	**22.82**	**149,790**	**13,120**	**38.52**	**3.0**	**0.40**
Hunting								
Deer, gun or muzzleloader	230	90	0.10	770	320	0.20	3.3	1.91
Deer, bow	400	110	0.18	1,750	530	0.45	4.4	1.81
Turkey	620	460	0.28	4,950	4,140	1.27	8.0	8.99
Waterfowl	4,640	360	2.09	25,770	1,910	6.63	5.6	0.59
Dove	100	33	0.05	190	60	0.05	1.9	0.90
Squirrel	4	4	0.00	11	10	0.00	2.8	3.19
Rabbit	17	12	0.01	36	26	0.01	2.1	2.16
Quail	80	38	0.04	250	120	0.06	3.1	1.94
Pheasant	0	0	0.00	0	0	0.00	--	--
Crow	0	0	0.00	0	0	0.00	--	--
Raccoon	0	0	0.00	0	0	0.00	--	--
Fox	0	0	0.00	0	0	0.00	--	--
Predator	0	0	0.00	0	0	0.00	--	--
Other Hunting	0	0	0.00	0	0	0.00	--	--
Hunting Subtotal	**6,050**	**580**	**2.73**	**33,680**	**4,540**	**8.66**	**5.57**	**0.92**

Table T - 9. Continued.

Activity	Individual-Visits Estimate	Individual-Visits Standard Error	Individual-Visits Percent	Hours Estimate	Hours Standard Error	Hours Percent	Average Length of Visits (Hrs)	Standard Error
Trapping	100	29	0.05	400	120	0.10	4.0	1.59
Frogging	0	0	0.00	0	0	0.00	--	--
Non-Consumptive Activities								
Camping, dept. site	270	90	0.12	9,140	4,750	2.35	33.9	21.33
Camping, other	2,000	640	0.90	43,820	16,030	11.27	21.9	10.68
Picnicking, dept. site	480	170	0.22	740	410	0.19	1.5	1.00
Picnicking, other	3,110	790	1.40	2,510	630	0.65	0.8	0.29
Swimming	110	50	0.05	150	70	0.04	1.4	0.86
Floating	290	120	0.13	630	300	0.16	2.2	1.36
Boating	5,320	420	2.40	20,010	2,220	5.15	3.8	0.51
Canoeing	1,760	1,160	0.79	3,930	870	1.01	2.2	1.55
Nature Study	3,440	930	1.55	2,170	430	0.56	0.6	0.21
Loafing	9,480	1,830	4.28	6,390	750	1.64	0.7	0.15
Sightseeing	84,730	5,270	38.24	48,650	2,570	12.51	0.6	0.05
Cottage Use	0	0	0.00	0	0	0.00	--	--
Off-road Vehicle	580	370	0.26	310	190	0.08	0.5	0.47
Gathering Products	7,050	1,480	3.18	13,490	3,780	3.47	1.9	0.67
Target Shooting	2,050	1,030	0.93	900	470	0.23	0.4	0.32
Rappelling	340	340	0.15	340	340	0.09	1.0	1.41
Caving	0	0	0.00	0	0	0.00	--	--
Waterskiing	40	20	0.02	120	60	0.03	3.0	2.06
Biking	2,350	780	1.06	2,310	850	0.59	1.0	0.49
Jet Skiing	170	50	0.08	310	100	0.08	1.8	0.78
Sunbathing	14	7	0.01	31	15	0.01	2.2	1.55
Partying	300	140	0.14	493	209	0.13	1.6	1.06
Hiking	1,700	810	0.77	4,260	2,600	1.10	2.5	1.94
Exercising	35,450	4,330	16.00	32,860	8,300	8.45	0.9	0.26
Preparing for Hunting Season	3,270	1,350	1.48	3,650	1,780	0.94	1.1	0.71
Tuning (or trying out) Boat and Motor	1,040	150	0.47	1,760	540	0.45	1.7	0.57

Table T - 9. Continued.

Activity	Individual-Visits Estimate	Individual-Visits Standard Error	Individual-Visits Percent	Hours Estimate	Hours Standard Error	Hours Percent	Average Length of Visits (Hrs)	Standard Error
Lewis and Clark Event and Trail Tour	610	140	0.28	2,790	2,130	0.72	4.6	3.66
Photography	1,070	260	0.48	570	100	0.15	0.5	0.16
Playground/Telephone/Restroom	260	70	0.12	230	80	0.06	0.9	0.39
Sporting Activities	810	390	0.37	690	410	0.18	0.9	0.65
Dog Training	26	12	0.01	29	13	0.01	1.1	0.70
Observed Paddlefish Snagging	0	0	0.00	0	0	0.00	--	--
Geocaching	50	30	0.02	40	30	0.01	0.8	0.87
Education Tour	260	200	0.12	240	200	0.06	0.9	1.08
Oregon & Calif. Trail Tour	0	0	0.00	0	0	0.00	--	--
Horseback Riding	9	7	0.00	2	2	0.00	0.2	0.27
Fireworks	0	0	0.00	0	0	0.00	--	--
Ice Skating	0	0	0.00	0	0	0.00	--	--
Arts & Crafts	0	0	0.00	0	0	0.00	--	--
Releasing Wildlife	200	200	0.09	50	50	0.01	0.3	0.35
Model Airplane Flying	0	0	0.00	0	0	0.00	--	--
Motorcycling	0	0	0.00	0	0	0.00	--	--
MO River Relief	22	21	0.01	14	13	0.00	0.6	0.85
Non-Consumptive Activities Subtotal	**164,690**	**8,760**	**74.33**	**203,360**	**21,140**	**52.30**	**1.2**	**0.14**
Undefined Use	2,000	750	0.90	1,600	440	0.41	0.8	0.37
Work Trip	410	220	0.19	1,340	680	0.34	3.3	2.35
Unknown	0	0	0.00	0	0	0.00	--	--
Overall Total	**221,560**	**10,400**	**100.00**	**388,820**	**28,500**	**100.00**	**1.8**	**0.15**

[a] Tributaries included in these results were the Kansas (Kaw) River at Kaw Point Access and the Platte River up to Schimmel City Access.

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Table T - 10. Estimates of successful parties, number of fish caught, number of fish harvested and the harvest rate for different fish species taken from the Missouri River and its major tributaries[a] from just downstream of Miami, Missouri to Atchison, Kansas corresponding to Fleener's (1989) Segment C for the period from January 3, 2004 through January 28, 2005.

Species	Successful Parties	Standard Error	Total Catch	Standard Error	Total Harvest	Standard Error	Harvest Rate (per 100 Hrs)	Standard Error
Paddlefish	5	5	5	5	0	0	0.00	0.00
Lake Sturgeon	33	15	37	16	4	4	0.00	0.00
Shovelnose Sturgeon	280	40	610	100	50	22	0.03	0.02
Pallid Sturgeon	50	16	70	23	0[b]	0[b]	0.00[b]	0.00[b]
Shortnose Gar	140	34	230	50	40	24	0.03	0.02
Spotted Gar	0	0	0	0	0	0	0.00	0.00
Longnose Gar	580	290	830	310	150	100	0.10	0.07
Gar sp/pref	0	0	0	0	0	0	0.00	0.00
Bowfin	0	0	0	0	0	0	0.00	0.00
Goldeye	12	8	19	13	8	7	0.01	0.00
Skipjack Herring	17	9	43	31	43	31	0.03	0.02
Gizzard Shad	0	0	0	0	0	0	0.00	0.00
Threadfin Shad	0	0	0	0	0	0	0.00	0.00
Trout sp/pref	0	0	0	0	0	0	0.00	0.00
Bigmouth Buffalo	80	25	1,640	570	1,640	570	1.10	0.39
Black Buffalo	25	13	610	510	600	510	0.40	0.34
Smallmouth Buffalo	40	14	1,080	490	1,060	490	0.71	0.33
Buffalo sp/pref	0	0	0	0	0	0	0.00	0.00
Quillback	7	6	7	6	0	0	0.00	0.00
River Carpsucker	20	19	20	19	10	10	0.01	0.01
Highfin Carpsucker	0	0	0	0	0	0	0.00	0.00
Carpsucker sp	0	0	0	0	0	0	0.00	0.00
Blue Sucker	0	0	0	0	0	0	0.00	0.00
White Sucker	18	11	18	11	4	3	0.00	0.00
Shorthead Redhorse	4	4	4	4	0	0	0.00	0.00
Carp	740	170	1,770	420	830	300	0.55	0.21
Grass Carp	120	32	520	230	430	230	0.29	0.15
Silver Carp	50	14	160	60	110	50	0.07	0.03
Bighead Carp	780	520	1,150	540	1,030	540	0.68	0.37

Table T - 10. Continued.

Species	Successful Parties	Standard Error	Total Catch	Standard Error	Total Harvest	Standard Error	Harvest Rate (per 100 Hrs)	Standard Error
Channel Catfish	7,220	1,220	24,630	6,800	15,480	5,580	10.34	3.83
Blue Catfish	3,860	940	7,660	1,540	5,620	1,440	3.75	1.01
Catfish sp/pref	0	0	0	0	0	0	0.00	0.00
Black Bullhead	50	23	130	80	100	80	0.07	0.05
Yellow Bullhead	50	20	340	240	320	240	0.21	0.16
Brown Bullhead	6	5	6	5	6	5	0.00	0.00
Bullhead sp/pref	11	8	21	17	0	0	0.00	0.00
Flathead Catfish	2,570	580	4,250	630	3,330	610	2.22	0.45
Grass Pickerel	4	3	9	7	0	0	0.00	0.00
Northern Pike	0	0	0	0	0	0	0.00	0.00
Eel	0	0	0	0	0	0	0.00	0.00
White Perch	22	13	47	27	47	27	0.03	0.02
White Bass	310	280	310	280	290	280	0.20	0.19
Striped Bass Hybrid	9	6	160	130	140	120	0.09	0.08
Yellow Bass	0	0	0	0	0	0	0.00	0.00
Striped Bass	11	8	14	11	7	7	0.00	0.00
Sauger	0	0	0	0	0	0	0.00	0.00
Walleye	6	5	6	5	0	0	0.00	0.00
Spotted Bass	0	0	0	0	0	0	0.00	0.00
Smallmouth Bass	0	0	0	0	0	0	0.00	0.00
Largemouth Bass	3	3	3	3	0	0	0.00	0.00
Warmouth	0	0	0	0	0	0	0.00	0.00
Green Sunfish	11	6	11	6	0	0	0.00	0.00
Bluegill	12	9	34	30	5	5	0.00	0.00
Black Crappie	520	520	1,050	1,040	1,050	1,040	0.70	0.70
White Crappie	0	0	0	0	0	0	0.00	0.00
Crappie sp/pref	0	0	0	0	0	0	0.00	0.00
Freshwater Drum	1,550	370	2,720	500	680	140	0.45	0.10
Fishing/anything	60	19	180	80	140	80	0.09	0.05
Fish Total	**24,710**	**2,130**	**50,400**	**7,210**	**33,240**	**6,010**	**22.19**	**4.46**

[a] Tributaries included in these results were the Kansas (Kaw) River at Kaw Point Access and the Platte River up to Schimmel City Access.

[b] Species is listed as a federal endangered species under the Endangered Species Act, therefore, harvest of this species was not legal. Estimate of harvest reflects what the survey clerk recorded as being reported by the interviewed public user. Return to page 174.

Table T - 11. Estimates of successful hunting parties, number of wildlife shot, number harvested and the harvest rate for different wildlife species taken by hunters on the Missouri River and its major tributaries[a] from just downstream of Miami, Missouri to Atchison, Kansas corresponding to Fleener's (1989) Segment C for the period from January 3, 2004 through January 28, 2005.

Species	Successful Parties	Standard Error	Total Shot	Standard Error	Total Harvest	Standard Error	Harvest Rate (per 100 Hrs)	Standard Error
White-tailed Deer	60	27	70	28	70	28	0.21	0.09
Squirrel	0	0	0	0	0	0	0.00	0.00
Rabbit	0	0	0	0	0	0	0.00	0.00
Raccoon	50	18	220	80	210	80	0.61	0.26
Beaver	10	6	35	21	35	21	0.10	0.07
Mink	0	0	0	0	0	0	0.00	0.00
Bobcat	26	16	38	24	13	13	0.04	0.04
Red Fox	0	0	0	0	0	0	0.00	0.00
Opossum	6	6	32	30	32	30	0.10	0.09
Coyote	0	0	0	0	0	0	0.00	0.00
Mourning Dove	35	15	170	90	170	90	0.51	0.26
Bobwhite Quail	16	14	16	14	16	14	0.05	0.04
Crow	0	0	0	0	0	0	0.00	0.00
Turkey	9	6	9	6	9	6	0.03	0.02
Pheasant	0	0	0	0	0	0	0.00	0.00
Mallard	1,300	120	7,170	900	7,160	900	21.25	3.92
Wigeon	140	22	190	38	190	36	0.56	0.13
Blue-Winged Teal	70	25	140	60	140	60	0.41	0.18
Green-Winged Teal	270	50	670	150	670	150	2.00	0.53
Pintail	28	10	35	13	35	13	0.10	0.04
Shoveler	110	25	150	33	150	33	0.43	0.11
Gadwall	230	40	510	140	510	140	1.51	0.45
Wood Duck	18	8	23	9	23	9	0.07	0.03
Redhead	2	2	2	2	2	2	0.01	0.01
Ring-Necked Duck	32	18	50	27	50	27	0.14	0.08
Greater Scaup	11	7	11	7	11	7	0.03	0.02
Lesser Scaup	4	4	8	8	8	8	0.02	0.02
Goldeneye	4	4	4	4	4	4	0.01	0.01
Bufflehead	0	0	0	0	0	0	0.00	0.00

Table T - 11. Continued.

Species	Successful Parties	Standard Error	Total Shot	Standard Error	Total Harvest	Standard Error	Harvest Rate (per 100 Hours)	Standard Error
Common Merganser	19	14	19	14	19	14	0.06	0.04
Other Ducks	8	6	8	6	8	6	0.02	0.02
Canada Goose	80	24	160	50	160	50	0.47	0.16
Snow Goose	90	21	190	60	190	60	0.57	0.20
Ross Goose	4	4	8	7	8	7	0.02	0.02
Coot	29	11	29	11	29	11	0.09	0.04
Woodcock	0	0	0	0	0	0	0.00	0.00
Turtle	15	10	15	10	6	5	0.02	0.02
Clam	0	0	0	0	0	0	0.00	0.00
Hunting/Unknown	0	0	0	0	0	0	0.00	0.00
Hunting Total	3,210	490	9,980	940	9,910	940	**29.43**	**4.85**
Frog	0	0	0	0	0	0	0.00	0.00
Frogging Total	**0**	**0**	**0**	**0**	**0**	**0**	**0.00**	**0.00**

[a] Tributaries included in these results were the Kansas (Kaw) River at Kaw Point Access and the Platte River up to Schimmel City Access.

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Table T - 12. Socio-demographic characteristics of users of the Missouri River and the lower Kansas River and the lower Platte River from just downstream of Miami, Missouri to Atchison, Kansas corresponding to Fleener's (1989) Segment C for the period from January 3, 2004 through January 28, 2005. Return to page 174.

Characteristic	Estimate	Standard Error	Percent
Age			
0-11 Years Old	19,290	2,490	8.70
12-15 Years Old	5,890	720	2.66
16-17 Years Old	3,430	620	1.55
18-24 Years Old	15,790	2,150	7.13
25-34 Years Old	32,380	2,710	14.61
35-44 Years Old	41,710	2,840	18.82
45-64 Years Old	73,900	4,450	33.35
65 or Older	27,770	2,050	12.53
Unknown Age	1,420	980	0.64
Gender			
Male	161,480	7,410	72.88
Female	58,630	4,250	26.46
Unknown Gender	1,440	980	0.65
Race			
White	200,600	9,610	90.54
Black or African-American	12,110	1,470	5.46
Hispanic or Latino	4,630	1,030	2.09
Asian	380	70	0.17
American Indian	1,230	410	0.56
Other	550	130	0.25
Unknown race	2,050	1,100	0.93
Impairment			
No Impairment	205,230	9,820	92.63
Hearing Impaired	2,750	710	1.24
Visually Impaired	520	210	0.23
Learning Impaired	210	50	0.09
Mobility Impaired	5,090	660	2.30
Other Impairment	5,180	1,210	2.34
Unknown Impairment Status	2,000	1,000	0.90
Permit Ownership			
Owned a fishing or Hunting Permit	96,120	4,960	43.39
Did Not own a fishing or hunting permit	120,010	6,960	54.17
Unknown permit ownership status	5,430	1,740	2.45

Table T - 13. Estimates of public use for the Missouri River and its major tributary[a] from Atchison, Kansas to the Iowa-Missouri state line corresponding to Fleener's (1989) Segment D for the period from January 3, 2004 through January 28, 2005.

	Individual- Visits			Hours			Average	
Activity	Estimate	Standard Error	Percent	Estimate	Standard Error	Percent	Length of Visits (Hrs)	Standard Error
Fishing								
Rod/Reel - Non-tournament	66,910	6,130	20.48	211,890	26,880	20.16	3.2	0.50
Oth. Methods - Non-tournament	6,540	1,950	2.00	24,510	8,100	2.33	3.7	1.67
Rod/Reel & Oth. Meths. - Non-tour.	1,460	650	0.45	5,880	2,000	0.56	4.0	2.25
Rod/Reel - Tournament	210	160	0.06	1,820	1,350	0.17	8.7	9.13
Oth. Methods - Tournament	0	0	0.00	0	0	0.00	--	--
Rod/Reel & Oth. Meths. - Tour.	17	18	0.01	26	26	0.00	1.5	2.15
Commercial	230	60	0.07	1,060	330	0.10	4.6	1.87
Snagging Paddlefish (Nebraska)	0	0	0.00	0	0	0.00	--	--
Collecting Bait	610	500	0.19	340	250	0.03	0.6	0.61
Fishing Subtotal	**75,660**	**6,460**	**23.16**	**245,520**	**27,990**	**23.36**	**3.2**	**0.46**
Hunting								
Deer, gun or muzzleloader	920	140	0.28	8,480	2,390	0.81	9.2	2.93
Deer, bow	910	210	0.28	4,690	1,170	0.45	5.2	1.74
Turkey	230	50	0.07	800	190	0.08	3.5	1.13
Waterfowl	3,810	600	1.17	20,390	2,050	1.94	5.4	0.99
Dove	1,490	570	0.46	2,030	800	0.19	1.4	0.75
Squirrel	4	4	0.00	13	13	0.00	3.3	4.22
Rabbit	90	29	0.03	120	37	0.01	1.3	0.59
Quail	1,050	710	0.32	2,810	1,860	0.27	2.7	2.53
Pheasant	7,840	3,740	2.40	43,090	27,630	4.10	5.5	4.39
Crow	0	0	0.00	0	0	0.00	--	--
Raccoon	11	11	0.00	405	390	0.04	36.8	49.03
Fox	4	3	0.00	29	24	0.00	7.3	9.18
Predator	14	11	0.00	11	8	0.00	0.8	0.81
Other Hunting	12	10	0.00	3	3	0.00	0.3	0.30
Hunting Subtotal	**15,640**	**3,850**	**4.79**	**82,870**	**27,960**	**7.89**	**5.30**	**2.21**

Table T - 13. Continued.

Activity	Individual-Visits Estimate	Individual-Visits Standard Error	Individual-Visits Percent	Hours Estimate	Hours Standard Error	Hours Percent	Average Length of Visits (Hrs)	Standard Error
Trapping	840	760	0.26	1,440	570	0.14	1.7	1.68
Frogging	0	0	0.00	0	0	0.00	--	--
Non-Consumptive Activities								
Camping, dept. site	5,610	490	1.72	254,310	25,160	24.20	45.3	5.96
Camping, other	10,040	2,530	3.07	158,570	37,780	15.09	15.8	5.47
Picnicking, dept. site	1,280	660	0.39	1,830	480	0.17	1.4	0.83
Picnicking, other	3,480	1,430	1.07	2,070	570	0.20	0.6	0.30
Swimming	2,160	1,040	0.66	3,340	1,680	0.32	1.5	1.08
Floating	350	110	0.11	1,650	610	0.16	4.7	2.24
Boating	9,960	880	3.05	33,590	3,310	3.20	3.4	0.45
Canoeing	940	380	0.29	19,760	16,070	1.88	21.0	19.08
Nature Study	5,450	1,220	1.67	7,670	1,710	0.73	1.4	0.44
Loafing	14,940	3,100	4.57	8,250	1,460	0.79	0.6	0.15
Sightseeing	109,210	9,100	33.43	78,570	9,490	7.48	0.7	0.11
Cottage Use	1,250	1,000	0.38	1,150	610	0.11	0.9	0.89
Off-road Vehicle	6,280	2,520	1.92	9,880	4,310	0.94	1.6	0.93
Gathering Products	9,710	3,530	2.97	9,460	2,070	0.90	1.0	0.41
Target Shooting	2,360	1,220	0.72	1,450	840	0.14	0.6	0.48
Rappelling	190	190	0.06	470	470	0.04	2.5	3.54
Caving	1,640	200	0.50	1,910	630	0.18	1.2	0.41
Waterskiing	260	120	0.08	350	140	0.03	1.3	0.83
Biking	8,240	2,200	2.52	11,750	3,240	1.12	1.4	0.55
Jet Skiing	750	230	0.23	1,380	240	0.13	1.8	0.64
Sunbathing	320	110	0.10	680	240	0.06	2.1	1.05
Partying	4,350	1,320	1.33	11,370	4,650	1.08	2.6	1.33
Hiking	6,780	1,890	2.08	18,190	2,570	1.73	2.7	0.84
Exercising	54,930	7,530	16.81	59,510	12,680	5.66	1.1	0.27
Preparing for Hunting Season	1,720	160	0.53	1,360	180	0.13	0.8	0.13
Tuning (or trying out) Boat and Motor	2,110	670	0.65	1,650	380	0.16	0.8	0.31

Table T - 13. Continued.

Activity	Individual-Visits Estimate	Individual-Visits Standard Error	Individual-Visits Percent	Hours Estimate	Hours Standard Error	Hours Percent	Average Length of Visits (Hrs)	Standard Error
Lewis and Clark Event and Trail Tour	1,510	560	0.46	11,150	6,070	1.06	7.4	4.88
Photography	3,240	1,030	0.99	2,660	1,010	0.25	0.8	0.41
Playground/Telephone/Restroom	2,380	940	0.73	1,540	890	0.15	0.6	0.45
Sporting Activities	590	180	0.18	1,950	820	0.19	3.3	1.72
Dog Training	11	10	0.00	3	2	0.00	0.3	0.32
Observed Paddlefish Snagging	0	0	0.00	0	0	0.00	--	--
Geocaching	0	0	0.00	0	0	0.00	--	--
Education Tour	0	0	0.00	0	0	0.00	--	--
Oregon & Calif. Trail Tour	360	320	0.11	360	320	0.03	1.0	1.24
Horseback Riding	290	80	0.09	1,550	660	0.15	5.3	2.70
Fireworks	10	10	0.00	5	5	0.00	0.5	0.66
Ice Skating	0	0	0.00	0	0	0.00	--	--
Arts & Crafts	0	0	0.00	0	0	0.00	--	--
Releasing Wildlife	0	0	0.00	0	0	0.00	--	--
Model Airplane Flying	0	0	0.00	0	0	0.00	--	--
Motorcycling	0	0	0.00	0	0	0.00	--	--
MO River Relief	0	0	0.00	0	0	0.00	--	--
Non-Consumptive Activities Subtotal	**248,260**	**15,400**	**75.99**	**719,410**	**53,320**	**220.20**	**2.90**	**0.28**
Undefined Use	1,070	340	0.33	1,440	700	0.14	1.3	0.78
Work Trip	4,880	1,720	1.49	11,510	6,840	1.10	2.4	1.63
Unknown	140	40	0.04	250	100	0.02	1.8	0.92
Overall Total	**326,710**	**16,760**	**100.00**	**1,050,910**	**71,500**	**100.00**	**3.2**	**0.27**

[a] The tributary included in these results was the Nishnabotna River up to Watson Access.

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Table T - 14. Estimates of successful parties, number of fish caught, number of fish harvested and the harvest rate for different fish species taken from the Missouri River and its major tributary[a] from Atchison, Kansas to the Iowa-Missouri state line corresponding to Fleener's (1989) Segment D for the period from January 3, 2004 through January 28, 2005.

Species	Successful Parties	Standard Error	Total Catch	Standard Error	Total Harvest	Standard Error	Harvest Rate (per 100 Hrs)	Standard Error
Paddlefish	9	7	17	15	0	0	0.00	0.00
Lake Sturgeon	80	18	670	330	13	10	0.01	0.00
Shovelnose Sturgeon	3,350	1,230	4,860	1,420	120	50	0.05	0.02
Pallid Sturgeon	400	250	560	270	6[b]	6[b]	0.00[b]	0.00[b]
Shortnose Gar	270	40	560	110	50	40	0.02	0.02
Spotted Gar	0	0	0	0	0	0	0.00	0.00
Longnose Gar	1,000	440	1,410	530	70	40	0.03	0.02
Gar sp/pref	0	0	0	0	0	0	0.00	0.00
Bowfin	0	0	0	0	0	0	0.00	0.00
Goldeye	50	15	110	32	90	31	0.04	0.01
Skipjack Herring	50	23	70	30	50	26	0.02	0.01
Gizzard Shad	0	0	0	0	0	0	0.00	0.00
Threadfin Shad	0	0	0	0	0	0	0.00	0.00
Trout sp/pref	0	0	0	0	0	0	0.00	0.00
Bigmouth Buffalo	60	23	610	330	580	330	0.24	0.14
Black Buffalo	8	7	8	7	8	7	0.00	0.00
Smallmouth Buffalo	8	6	8	6	4	5	0.00	0.00
Buffalo sp/pref	0	0	0	0	0	0	0.00	0.00
Quillback	13	8	120	100	120	100	0.05	0.04
River Carpsucker	80	30	150	60	50	26	0.02	0.01
Highfin Carpsucker	0	0	0	0	0	0	0.00	0.00
Carpsucker sp	0	0	0	0	0	0	0.00	0.00
Blue Sucker	17	15	17	15	5	4	0.00	0.00
White Sucker	0	0	0	0	0	0	0.00	0.00
Shorthead Redhorse	0	0	0	0	0	0	0.00	0.00
Carp	7,970	1,930	13,270	3,020	10,470	2,820	4.26	1.25
Grass Carp	150	33	950	400	890	400	0.36	0.17
Silver Carp	60	21	1,190	520	1,170	520	0.48	0.22
Bighead Carp	50	17	360	200	170	160	0.07	0.06

Table T - 14. Continued.

Species	Successful Parties	Standard Error	Total Catch	Standard Error	Total Harvest	Standard Error	Harvest Rate (per 100 Hrs)	Standard Error
Channel Catfish	8,760	1,410	27,300	5,630	20,240	5,410	8.24	2.40
Blue Catfish	960	300	1,340	390	1,170	380	0.48	0.17
Catfish sp/pref	0	0	0	0	0	0	0.00	0.00
Black Bullhead	34	13	50	19	11	8	0.00	0.00
Yellow Bullhead	60	24	250	150	190	140	0.08	0.06
Brown Bullhead	0	0	0	0	0	0	0.00	0.00
Bullhead sp/pref	0	0	0	0	0	0	0.00	0.00
Flathead Catfish	3,000	570	4,880	650	3,070	500	1.25	0.25
Grass Pickerel	0	0	0	0	0	0	0.00	0.00
Northern Pike	0	0	0	0	0	0	0.00	0.00
Eel	13	11	13	11	0	0	0.00	0.00
White Perch	7	6	7	6	0	0	0.00	0.00
White Bass	5	5	5	5	5	5	0.00	0.00
Striped Bass Hybrid	0	0	0	0	0	0	0.00	0.00
Yellow Bass	0	0	0	0	0	0	0.00	0.00
Striped Bass	9	10	80	90	0	0	0.00	0.00
Sauger	13	8	32	22	5	5	0.00	0.00
Walleye	0	0	0	0	0	0	0.00	0.00
Spotted Bass	0	0	0	0	0	0	0.00	0.00
Smallmouth Bass	0	0	0	0	0	0	0.00	0.00
Largemouth Bass	0	0	0	0	0	0	0.00	0.00
Warmouth	0	0	0	0	0	0	0.00	0.00
Green Sunfish	0	0	0	0	0	0	0.00	0.00
Bluegill	0	0	0	0	0	0	0.00	0.00
Black Crappie	20	11	70	50	37	24	0.02	0.01
White Crappie	12	8	12	8	6	5	0.00	0.00
Crappie sp/pref	0	0	0	0	0	0	0.00	0.00
Freshwater Drum	3,340	870	4,490	900	770	400	0.31	0.16
Fishing/anything	21	12	24	13	9	6	0.00	0.00
Fish Total	**42,660**	**3,300**	**63,450**	**6,730**	**39,350**	**6,200**	**16.03**	**3.12**

[a] The tributary included in these results was the Nishnabotna River up to Watson Access.

[b] Species is listed as a federal endangered species under the Endangered Species Act, therefore, harvest of this species was not legal. Estimate of harvest reflects what the survey clerk recorded as being reported by the interviewed public user.

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Table T - 15. Estimates of successful hunting parties, number of wildlife shot or trapped, number harvested and the harvest rate for different wildlife species taken by hunters on the Missouri River and its major tributary[a] from Atchison, Kansas to the Iowa-Missouri state line corresponding to Fleener's (1989) Segment D for the period from January 3, 2004 through January 28, 2005.

Species	Successful Parties	Standard Error	Total Shot/ Trapped	Standard Error	Total Harvest	Standard Error	Harvest Rate (per 100 Hrs)	Standard Error
White-tailed Deer	110	28	160	50	160	50	0.19	0.09
Squirrel	0	0	0	0	0	0	0.00	0.00
Rabbit	21	9	31	14	31	14	0.04	0.02
Raccoon	24	12	410	230	230	150	0.28	0.20
Beaver	11	9	440	390	0	0	0.00	0.00
Mink	7	7	14	15	0	0	0.00	0.00
Bobcat	4	3	4	3	4	3	0.00	0.00
Red Fox	7	7	7	7	0	0	0.00	0.00
Opossum	0	0	0	0	0	0	0.00	0.00
Coyote	8	5	8	5	8	5	0.01	0.01
Mourning Dove	250	120	1,740	1,050	1,740	1,050	2.10	1.45
Bobwhite Quail	3	3	3	3	3	3	0.00	0.00
Crow	0	0	0	0	0	0	0.00	0.00
Turkey	23	13	23	13	23	13	0.03	0.02
Pheasant	1,930	950	4,750	2,830	4,750	2,830	5.73	3.92
Mallard	650	70	2,380	330	2,380	330	2.87	1.05
Wigeon	120	28	170	37	170	37	0.20	0.08
Blue-Winged Teal	80	25	170	60	170	60	0.21	0.10
Green-Winged Teal	230	36	510	100	510	100	0.62	0.24
Pintail	60	20	90	29	90	29	0.11	0.05
Shoveler	150	31	270	80	270	80	0.32	0.14
Gadwall	280	40	570	100	570	100	0.69	0.26
Wood Duck	50	17	70	26	70	26	0.08	0.04
Redhead	10	6	10	6	10	6	0.01	0.01
Ring-Necked Duck	60	25	70	37	70	37	0.09	0.05
Greater Scaup	5	4	10	9	10	9	0.01	0.01
Lesser Scaup	13	10	15	11	15	11	0.02	0.01
Goldeneye	4	4	8	7	8	7	0.01	0.01
Bufflehead	0	0	0	0	0	0	0.00	0.00

Table T - 15. Continued.

Species	Successful Parties	Standard Error	Total Shot/ Trapped	Standard Error	Total Harvest	Standard Error	Harvest Rate (per 100 Hrs)	Standard Error
Common Merganser	12	7	20	14	20	14	0.02	0.02
Other Ducks	5	4	5	4	5	4	0.01	0.01
Canada Goose	30	15	100	50	100	50	0.12	0.08
Snow Goose	8	7	16	15	16	15	0.02	0.00
Ross Goose	0	0	0	0	0	0	0.00	0.00
Coot	5	5	5	5	5	5	0.01	0.00
Woodcock	0	0	0	0	0	0	0.00	0.00
Turtle	5	5	5	5	0	0	0.00	0.00
Clam	0	0	0	0	0	0	0.00	0.00
Hunting/Unknown	0	0	0	0	0	0	0.00	0.00
Hunting Total	6,820	1,100	12,050	3,070	11,420	3,040	**13.78**	**5.93**
Frog	0	0	0	0	0	0	0.00	0.00
Frogging Total	**0**	**0**	**0**	**0**	**0**	**0**	**0.00**	**0.00**

[a] The tributary included in these results was the Nishnabotna River up to Watson Access.

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Table T - 16. Socio-demographics of users of the Missouri River and the lower Nishnabotna River from Atchison, Kansas to the Iowa-Missouri state line corresponding to Fleener's (1989) Segment D for the period from January 3, 2004 through January 28, 2005. To page 176.

Characteristic	Estimate	Standard Error	Percent
Age			
0-11 Years Old	28,210	3,740	8.63
12-15 Years Old	10,590	2,020	3.24
16-17 Years Old	6,280	1,230	1.92
18-24 Years Old	25,120	2,750	7.69
25-34 Years Old	55,640	5,330	17.03
35-44 Years Old	53,490	4,720	16.37
45-64 Years Old	105,390	7,130	32.26
65 or Older	41,620	4,060	12.74
Unknown Age	380	80	0.12
Gender			
Male	235,700	11,630	72.14
Female	90,490	7,620	27.70
Unknown Gender	530	310	0.16
Race			
White	315,520	16,240	96.57
Black or African-American	6,390	1,790	1.96
Hispanic or Latino	1,660	550	0.51
Asian	440	180	0.14
American Indian	1,040	190	0.32
Other	100	30	0.03
Unknown race	1,560	770	0.48
Impairment			
No Impairment	294,590	15,500	90.17
Hearing Impaired	4,100	880	1.25
Visually Impaired	1,670	620	0.51
Learning Impaired	1,010	420	0.31
Mobility Impaired	14,900	2,800	4.56
Other Impairment	7,380	1,460	2.26
Unknown Impairment Status	3,060	1,160	0.94
Permit Ownership			
Owned a fishing or Hunting Permit	148,570	9,270	45.47
Did Not own a fishing or hunting permit	163,020	11,410	49.90
Unknown permit ownership status	15,131	3,230	4.63

Table T - 17. Estimates of public use for the Missouri River from the Nebraska-Kansas state line to the Iowa-Missouri state line (Nebraska's Segment 1) for the period from January 3, 2004 through January 28, 2005.

	Individual-Visits			Hours			Average Length of Visits (Hrs)	Standard Error
Activity	Estimate	Standard Error	Percent	Estimate	Standard Error	Percent		
Fishing								
Rod/Reel - Non-tournament	24,180	4,390	30.93	103,360	24,820	19.39	4.3	1.29
Oth. Methods - Non-tournament	1,670	190	2.14	5,270	1,130	0.99	3.2	0.76
Rod/Reel & Oth. Meths. - Non-tour.	450	90	0.57	2,420	540	0.45	5.4	1.63
Rod/Reel - Tournament	8	6	0.01	50	39	0.01	6.1	6.75
Oth. Methods - Tournament	0	0	0.00	0	0	0.00	--	--
Rod/Reel & Oth. Meths. - Tour.	17	18	0.02	26	26	0.00	1.5	2.15
Commercial	140	40	0.18	730	300	0.14	5.2	2.64
Snagging Paddlefish (Nebraska)	0	0	0.00	0	0	0.00	--	--
Collecting Bait	90	34	0.11	60	29	0.01	0.7	0.44
Fishing Subtotal	**26,290**	**4,400**	**33.63**	**111,910**	**24,890**	**20.99**	**4.3**	**1.18**
Hunting								
Deer, gun or muzzleloader	450	100	0.57	6,830	2,360	1.28	15.2	6.27
Deer, bow	310	70	0.40	3,250	1,120	0.61	10.3	4.26
Turkey	130	40	0.17	650	180	0.12	5.0	2.01
Waterfowl	1,150	520	1.48	4,600	1,650	0.86	4.0	2.30
Dove	280	160	0.36	610	400	0.11	2.2	1.88
Squirrel	0	0	0.00	0	0	0.00	--	--
Rabbit	4	3	0.01	7	6	0.00	1.8	2.30
Quail	700	640	0.89	1,410	1,280	0.26	2.0	2.63
Pheasant	2,130	1,160	2.72	4,880	2,380	0.92	2.3	1.68
Crow	0	0	0.00	0	0	0.00	--	--
Raccoon	11	11	0.01	410	390	0.08	36.8	49.03
Fox	4	3	0.01	29	24	0.01	7.3	9.18
Predator	0	0	0.00	0	0	0.00	--	--
Other Hunting	12	10	0.02	3	3	0.00	0.3	0.30
Hunting Subtotal	**4,480**	**1,290**	**5.73**	**22,670**	**4,520**	**4.25**	**5.06**	**1.76**

Table T - 17. Continued.

Activity	Individual-Visits Estimate	Individual-Visits Standard Error	Individual-Visits Percent	Hours Estimate	Hours Standard Error	Hours Percent	Average Length of Visits (Hrs)	Standard Error
Trapping	70	29	0.09	1,180	530	0.22	16.9	8.94
Frogging	0	0	0.00	0	0	0.00	--	--
Non-Consumptive Activities								
Camping, dept. site	5,360	480	6.86	246,520	25,000	46.24	46.0	6.21
Camping, other	1,120	510	1.43	25,870	10,420	4.85	23.1	13.95
Picnicking, dept. site	1,160	660	1.48	1,630	460	0.31	1.4	0.9
Picnicking, other	300	100	0.38	530	220	0.10	1.8	0.95
Swimming	1,990	1,040	2.55	2,980	1,670	0.56	1.5	1.15
Floating	140	70	0.18	660	370	0.12	4.7	3.39
Boating	4,090	740	5.23	13,620	2,410	2.55	3.3	0.84
Canoeing	740	370	0.95	16,310	15,890	3.06	22.0	24.34
Nature Study	2,970	810	3.80	5,490	1,450	1.03	1.8	0.7
Loafing	6,860	2,690	8.78	4,060	1,210	0.76	0.6	0.29
Sightseeing	23,770	2,780	30.41	31,140	6,240	5.84	1.3	0.3
Cottage Use	1,180	1,000	1.51	1,130	610	0.21	1.0	0.96
Off-road Vehicle	2,610	1,500	3.34	2,810	1,530	0.53	1.1	0.85
Gathering Products	5,450	3,080	6.97	5,380	1,840	1.01	1.0	0.65
Target Shooting	990	660	1.27	520	400	0.10	0.5	0.53
Rappelling	0	0	0.00	0	0	0.00	--	--
Caving	1,640	200	2.10	1,910	630	0.36	1.2	0.41
Waterskiing	90	50	0.12	150	90	0.03	1.7	1.34
Biking	780	190	1.00	2,800	790	0.53	3.6	1.33
Jet Skiing	140	40	0.18	370	110	0.07	2.6	1.14
Sunbathing	27	19	0.03	80	60	0.02	3.0	3.14
Partying	1,010	510	1.29	1,350	360	0.25	1.3	0.75
Hiking	3,050	360	3.90	15,240	2,150	2.86	5.0	0.92
Exercising	480	90	0.61	630	190	0.12	1.3	0.47
Preparing for Hunting Season	420	80	0.54	430	90	0.08	1.0	0.28
Tuning (or trying out) Boat and Motor	1,080	650	1.38	760	340	0.14	0.7	0.52

Table T - 17. Continued.

Activity	Individual-Visits Estimate	Individual-Visits Standard Error	Individual-Visits Percent	Hours Estimate	Hours Standard Error	Hours Percent	Average Length of Visits (Hrs)	Standard Error
Lewis and Clark Event and Trail Tour	400	160	0.51	10,140	6,050	1.90	25.4	18.21
Photography	520	170	0.67	1,020	670	0.19	2.0	1.45
Playground/Telephone/Restroom	80	37	0.10	21	9	0.00	0.3	0.16
Sporting Activities	160	80	0.20	1,280	760	0.24	8.0	6.16
Dog Training	0	0	0.00	0	0	0.00	--	--
Observed Paddlefish Snagging	0	0	0.00	0	0	0.00	--	--
Geocaching	0	0	0.00	0	0	0.00	--	--
Education Tour	0	0	0.00	0	0	0.00	--	--
Oregon & Calif. Trail Tour	0	0	0.00	0	0	0.00	--	--
Horseback Riding	270	80	0.35	1,550	660	0.29	5.7	2.92
Fireworks	10	10	0.01	5	5	0.00	0.5	0.66
Ice Skating	0	0	0.00	0	0	0.00	--	--
Arts & Crafts	0	0	0.00	0	0	0.00	--	--
Releasing Wildlife	0	0	0.00	0	0	0.00	--	--
Model Airplane Flying	0	0	0.00	0	0	0.00	--	--
Motorcycling	0	0	0.00	0	0	0.00	--	--
MO River Relief	0	0	0.00	0	0	0.00	--	--
Non-Consumptive Activities Subtotal	**52,670**	**5,460**	**67.38**	**396,370**	**35,190**	**74.35**	**7.53**	**1.03**
Undefined Use	210	50	0.27	950	690	0.18	4.5	3.36
Work Trip	3,370	1,510	4.31	10,560	6,830	1.98	3.1	2.46
Unknown	0	0	0.00	0	0	0.00	--	--
Overall Total	**78,170**	**6,930**	**100.00**	**533,080**	**45,660**	**100.00**	**6.8**	**0.84**

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Table T - 18. Estimates of successful parties, number of fish caught, number of fish harvested and the harvest rate for different fish species taken from the Missouri River from the Nebraska-Kansas state line to the Iowa-Missouri state line (Nebraska's Segment 1) for the period from January 3, 2004 through January 28, 2005.

Species	Successful Parties	Standard Error	Total Catch	Standard Error	Total Harvest	Standard Error	Harvest Rate (per 100 Hrs)	Standard Error
Paddlefish	0	0	0	0	0	0	0.00	0.00
Lake Sturgeon	80	17	660	330	13	10	0.01	0.01
Shovelnose Sturgeon	1,710	1,080	1,920	1,080	50	22	0.04	0.02
Pallid Sturgeon	350	250	440	270	0[a]	0[a]	0.00[a]	0.00[a]
Shortnose Gar	120	32	350	100	40	40	0.04	0.04
Spotted Gar	0	0	0	0	0	0	0.00	0.00
Longnose Gar	600	270	960	400	17	10	0.02	0.01
Gar sp/pref	0	0	0	0	0	0	0.00	0.00
Bowfin	0	0	0	0	0	0	0.00	0.00
Goldeye	19	10	40	22	40	22	0.04	0.02
Skipjack Herring	29	21	50	25	29	21	0.03	0.02
Gizzard Shad	0	0	0	0	0	0	0.00	0.00
Threadfin Shad	0	0	0	0	0	0	0.00	0.00
Trout sp/pref	0	0	0	0	0	0	0.00	0.00
Bigmouth Buffalo	36	17	490	320	490	320	0.44	0.30
Black Buffalo	0	0	0	0	0	0	0.00	0.00
Smallmouth Buffalo	4	5	4	5	4	5	0.00	0.00
Buffalo sp/pref	0	0	0	0	0	0	0.00	0.00
Quillback	5	4	110	100	110	100	0.10	0.09
River Carpsucker	0	0	0	0	0	0	0.00	0.00
Highfin Carpsucker	0	0	0	0	0	0	0.00	0.00
Carpsucker sp	0	0	0	0	0	0	0.00	0.00
Blue Sucker	12	14	12	14	0	0	0.00	0.00
White Sucker	0	0	0	0	0	0	0.00	0.00
Shorthead Redhorse	0	0	0	0	0	0	0.00	0.00
Carp	4,090	1,460	8,130	2,620	6,180	2,420	5.52	2.49
Grass Carp	50	21	330	260	320	260	0.29	0.24
Silver Carp	21	9	110	70	100	70	0.09	0.06
Bighead Carp	28	10	180	130	4	3	0.00	0.00

Table T - 18. Continued.

Species	Successful Parties	Standard Error	Total Catch	Standard Error	Total Harvest	Standard Error	Harvest Rate (per 100 Hrs)	Standard Error
Channel Catfish	4,050	1,070	13,340	4,630	11,090	4,510	9.91	4.59
Blue Catfish	370	140	680	280	620	280	0.56	0.28
Catfish sp/pref	0	0	0	0	0	0	0.00	0.00
Black Bullhead	12	7	12	7	6	5	0.01	0.00
Yellow Bullhead	40	21	220	150	180	140	0.16	0.13
Brown Bullhead	0	0	0	0	0	0	0.00	0.00
Bullhead sp/pref	0	0	0	0	0	0	0.00	0.00
Flathead Catfish	1,350	440	2,370	480	1,920	470	1.71	0.57
Grass Pickerel	0	0	0	0	0	0	0.00	0.00
Northern Pike	0	0	0	0	0	0	0.00	0.00
Eel	0	0	0	0	0	0	0.00	0.00
White Perch	0	0	0	0	0	0	0.00	0.00
White Bass	0	0	0	0	0	0	0.00	0.00
Striped Bass Hybrid	0	0	0	0	0	0	0.00	0.00
Yellow Bass	0	0	0	0	0	0	0.00	0.00
Striped Bass	0	0	0	0	0	0	0.00	0.00
Sauger	3	3	21	20	0	0	0.00	0.00
Walleye	0	0	0	0	0	0	0.00	0.00
Spotted Bass	0	0	0	0	0	0	0.00	0.00
Smallmouth Bass	0	0	0	0	0	0	0.00	0.00
Largemouth Bass	0	0	0	0	0	0	0.00	0.00
Warmouth	0	0	0	0	0	0	0.00	0.00
Green Sunfish	0	0	0	0	0	0	0.00	0.00
Bluegill	0	0	0	0	0	0	0.00	0.00
Black Crappie	0	0	0	0	0	0	0.00	0.00
White Crappie	0	0	0	0	0	0	0.00	0.00
Crappie sp/pref	0	0	0	0	0	0	0.00	0.00
Freshwater Drum	1,140	530	1,510	550	260	160	0.24	0.16
Fishing/anything	0	0	0	0	0	0	0.00	0.00
Fish Total	**14,510**	**2,230**	**31,920**	**5,540**	**21,480**	**5,170**	**19.19**	**6.29**

[a] Species is listed as a federal endangered species under the Endangered Species Act, therefore, harvest of this species was not legal. Estimate of harvest reflects what the survey clerk recorded as being reported by the interviewed public user.

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Table T - 19. Estimates of successful hunting parties, number of wildlife shot or trapped, number harvested and the harvest rate for different wildlife species taken by hunters on the Missouri River from the Nebraska-Kansas state line to the Iowa-Missouri state line (Nebraska's Segment 1) for the period from January 3, 2004 through January 28, 2005.

Species	Successful Parties	Standard Error	Total Shot/ Trapped	Standard Error	Total Harvest	Standard Error	Harvest Rate (per 100 Hrs)	Standard Error
White-tailed Deer	100	27	150	50	150	50	0.65	0.25
Squirrel	0	0	0	0	0	0	0.00	0.00
Rabbit	6	5	11	10	11	10	0.05	0.05
Raccoon	24	12	410	230	230	150	1.02	0.68
Beaver	11	9	440	390	0	0	0.00	0.00
Mink	7	7	14	15	0	0	0.00	0.00
Bobcat	4	3	4	3	4	3	0.02	0.01
Red Fox	7	7	7	7	0	0	0.00	0.00
Opossum	0	0	0	0	0	0	0.00	0.00
Coyote	8	5	8	5	8	5	0.04	0.02
Mourning Dove	80	50	690	670	690	670	3.02	2.99
Bobwhite Quail	3	3	3	3	3	3	0.01	0.02
Crow	0	0	0	0	0	0	0.00	0.00
Turkey	19	12	19	12	19	12	0.08	0.06
Pheasant	900	570	1,460	990	1,460	990	6.46	4.55
Mallard	50	20	90	40	90	40	0.41	0.20
Wigeon	0	0	0	0	0	0	0.00	0.00
Blue-Winged Teal	13	8	40	35	40	35	0.19	0.16
Green-Winged Teal	6	6	22	23	22	23	0.10	0.10
Pintail	0	0	0	0	0	0	0.00	0.00
Shoveler	5	5	29	27	29	27	0.13	0.12
Gadwall	25	11	50	29	50	29	0.22	0.14
Wood Duck	5	5	5	5	5	5	0.02	0.02
Redhead	5	5	5	5	5	5	0.02	0.02
Ring-Necked Duck	0	0	0	0	0	0	0.00	0.00
Greater Scaup	0	0	0	0	0	0	0.00	0.00
Lesser Scaup	0	0	0	0	0	0	0.00	0.00
Goldeneye	0	0	0	0	0	0	0.00	0.00
Bufflehead	0	0	0	0	0	0	0.00	0.00

Table T - 19. Continued.

Species	Successful Parties	Standard Error	Total Shot/ Trapped	Standard Error	Total Harvest	Standard Error	Harvest Rate (per 100 Hrs)	Standard Error
Common Merganser	0	0	0	0	0	0	0.00	0.00
Other Ducks	5	4	5	4	5	4	0.02	0.02
Canada Goose	0	0	0	0	0	0	0.00	0.00
Snow Goose	0	0	0	0	0	0	0.00	0.00
Ross Goose	0	0	0	0	0	0	0.00	0.00
Coot	0	0	0	0	0	0	0.00	0.00
Woodcock	0	0	0	0	0	0	0.00	0.00
Turtle	0	0	0	0	0	0	0.00	0.00
Clam	0	0	0	0	0	0	0.00	0.00
Hunting/Unknown	0	0	0	0	0	0	0.00	0.00
Hunting Total	**2,360**	**640**	**3,450**	**1,280**	**2,820**	**1,200**	**12.45**	**5.86**
Frog	0	0	0	0	0	0	0.00	0.00
Frogging Total	**0**	**0**	**0**	**0**	**0**	**0**	**0.00**	**0.00**

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Table T - 20. Socio-demographic characteristics of Missouri River users from the Nebraska-Kansas state line to the Iowa-Missouri state line (Nebraska's Segment 1) for the period from January 3, 2004 through January 28, 2005.

Characteristic	Estimate	Standard Error	Percent
Age			
0-11 Years Old	5,550	1,490	7.10
12-15 Years Old	2,580	680	3.29
16-17 Years Old	1,110	370	1.42
18-24 Years Old	6,520	1,180	8.34
25-34 Years Old	11,330	1,770	14.50
35-44 Years Old	14,640	2,340	18.72
45-64 Years Old	28,290	4,060	36.20
65 or Older	7,900	1,590	10.11
Unknown Age	250	60	0.32
Gender			
Male	62,970	6,070	80.55
Female	15,040	1,630	19.24
Unknown Gender	160	50	0.21
Race			
White	75,160	6,470	96.14
Black or African-American	1,490	980	1.91
Hispanic or Latino	130	40	0.17
Asian	130	40	0.17
American Indian	370	60	0.47
Other	30	15	0.04
Unknown race	860	640	1.10
Impairment			
No Impairment	67,570	5,610	86.44
Hearing Impaired	550	170	0.70
Visually Impaired	290	250	0.38
Learning Impaired	60	22	0.08
Mobility Impaired	6,850	2,420	8.76
Other Impairment	1,900	1,060	2.43
Unknown Impairment Status	950	640	1.21
Permit Ownership			
Owned a fishing or Hunting Permit	42,420	4,980	54.26
Did Not own a fishing or hunting	34,660	4,070	44.33
Unknown permit ownership status	1,100	420	1.41

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Table T - 21. Estimates of public use for the Missouri River from the Iowa-Missouri state line to mouth of the Platte River near Plattsmouth, Nebraska (Nebraska's Segment 2) for the period from January 3, 2004 through January 28, 2005.

	Individual-Visits			Hours			Average	
Activity	Estimate	Standard Error	Percent	Estimate	Standard Error	Percent	Length of Visits (Hrs)	Standard Error
Fishing								
Rod/Reel - Non-tournament	17,790	3,210	11.88	63,670	14,990	12.15	3.6	1.06
Oth. Methods - Non-tournament	4,430	1,760	2.96	6,540	2,640	1.25	1.5	0.84
Rod/Reel & Oth. Meths. - Non-tour.	790	790	0.53	400	400	0.08	0.5	0.71
Rod/Reel - Tournament	0	0	0.00	0	0	0.00	--	--
Oth. Methods - Tournament	0	0	0.00	0	0	0.00	--	--
Rod/Reel & Oth. Meths. - Tour.	0	0	0.00	0	0	0.00	--	--
Commercial	450	180	0.30	850	280	0.16	1.9	1.01
Snagging Paddlefish (Nebraska)	0	0	0.00	0	0	0.00	--	--
Collecting Bait	50	40	0.03	26	21	0.00	0.5	0.57
Fishing Subtotal	**23,500**	**3,630**	**15.69**	**71,490**	**15,040**	**13.64**	**3.0**	**0.79**
Hunting								
Deer, gun or muzzleloader	25,740	6,400	17.19	77,950	19,100	14.88	3.0	1.06
Deer, bow	1,680	1,230	1.12	3,960	2,470	0.76	2.4	2.27
Turkey	1,180	840	0.79	4,150	3,320	0.79	3.5	3.76
Waterfowl	7,120	3,960	4.75	76,920	45,670	14.68	10.8	8.79
Dove	1,580	1,300	1.06	2,070	1,410	0.40	1.3	1.39
Squirrel	0	0	0.00	0	0	0.00	--	--
Rabbit	1,140	1,010	0.76	2,270	2,020	0.43	2.0	2.52
Quail	0	0	0.00	0	0	0.00	--	--
Pheasant	1,040	1,010	0.69	2,130	2,020	0.41	2.0	2.78
Crow	0	0	0.00	0	0	0.00	--	--
Raccoon	17	16	0.01	51	47	0.01	3.0	3.88
Fox	0	0	0.00	0	0	0.00	--	--
Predator	220	220	0.15	660	660	0.13	3.0	4.24
Other Hunting	11	5	0.01	21	11	0.00	1.9	1.46
Hunting Subtotal	**37,410**	**7,320**	**24.98**	**170,170**	**47,730**	**32.48**	**4.55**	**1.56**

Table T - 21. Continued.

Activity	Individual-Visits Estimate	Individual-Visits Standard Error	Individual-Visits Percent	Hours Estimate	Hours Standard Error	Hours Percent	Average Length of Visits (Hrs)	Standard Error
Trapping	90	32	0.06	270	100	0.05	3.0	1.45
Frogging	0	0	0.00	0	0	0.00	--	--
Non-Consumptive Activities								
Camping, dept. site	400	100	0.27	11,360	3,620	2.17	28.4	11.39
Camping, other	520	380	0.35	28,320	18,710	5.40	54.5	54.84
Picnicking, dept. site	36	32	0.02	110	100	0.02	3.1	3.77
Picnicking, other	0	0	0.00	0	0	0.00	--	--
Swimming	100	80	0.07	410	340	0.08	4.1	4.85
Floating	0	0	0.00	0	0	0.00	--	--
Boating	25,670	5,580	17.14	110,020	28,620	21.00	4.3	1.45
Canoeing	50	25	0.03	24,320	18,370	4.64	486.4	440.36
Nature Study	1,120	540	0.75	880	280	0.17	0.8	0.45
Loafing	13,240	3,900	8.84	6,400	2,050	1.22	0.5	0.21
Sightseeing	17,020	3,230	11.37	10,380	1,890	1.98	0.6	0.16
Cottage Use	220	220	0.15	60	60	0.01	0.3	0.35
Off-road Vehicle	280	220	0.19	960	880	0.18	3.4	4.20
Gathering Products	7,320	2,890	4.89	15,820	8,380	3.02	2.2	1.43
Target Shooting	4,100	1,840	2.74	4,950	2,470	0.94	1.2	0.81
Rappelling	0	0	0.00	0	0	0.00	--	--
Caving	0	0	0.00	0	0	0.00	--	--
Waterskiing	70	25	0.05	270	90	0.05	3.9	1.78
Biking	80	39	0.05	50	22	0.01	0.6	0.42
Jet Skiing	130	50	0.09	510	260	0.10	3.9	2.62
Sunbathing	60	50	0.04	300	250	0.06	5.0	5.76
Partying	200	60	0.13	400	120	0.08	2.0	0.85
Hiking	1,990	1,140	1.33	6,300	5,190	1.20	3.2	3.18
Exercising	4,190	2,100	2.80	19,790	18,940	3.78	4.7	5.10
Preparing for Hunting Season	7,790	2,930	5.20	16,100	9,570	3.07	2.1	1.45
Tuning (or trying out) Boat and Motor	1,060	520	0.71	1,220	590	0.23	1.2	0.79

Table T - 21. Continued.

Activity	Individual-Visits Estimate	Individual-Visits Standard Error	Individual-Visits Percent	Hours Estimate	Hours Standard Error	Hours Percent	Average Length of Visits (Hrs)	Standard Error
Lewis and Clark Event and Trail Tour	1,000	180	0.67	3,340	3,110	0.64	3.3	3.16
Photography	1,780	1,750	1.19	480	440	0.09	0.3	0.36
Playground/Telephone/Restroom	6	5	0.00	1	1	0.00	0.2	0.30
Sporting Activities	50	50	0.03	90	90	0.02	1.8	2.90
Dog Training	820	590	0.55	210	150	0.04	0.3	0.25
Observed Paddlefish Snagging	0	0	0.00	0	0	0.00	--	--
Geocaching	0	0	0.00	0	0	0.00	--	--
Education Tour	0	0	0.00	0	0	0.00	--	--
Oregon & Calif. Trail Tour	0	0	0.00	0	0	0.00	--	--
Horseback Riding	0	0	0.00	0	0	0.00	--	--
Fireworks	0	0	0.00	0	0	0.00	--	--
Ice Skating	0	0	0.00	0	0	0.00	--	--
Arts & Crafts	0	0	0.00	0	0	0.00	--	--
Releasing Wildlife	0	0	0.00	0	0	0.00	--	--
Model Airplane Flying	0	0	0.00	0	0	0.00	--	--
Motorcycling	0	0	0.00	0	0	0.00	--	--
MO River Relief	0	0	0.00	0	0	0.00	--	--
Non-Consumptive Activities Subtotal	**87,748**	**9,020**	**58.60**	**263,020**	**52,570**	**50.20**	**3.00**	**0.67**
Undefined Use	1,990	1,890	1.33	19,030	18,940	3.63	9.6	13.15
Work Trip	11	9	0.01	22	19	0.00	2.0	2.39
Unknown	0	0	0.00	0	0	0.00	--	--
Overall Total	**149,740**	**11,450**	**100.00**	**523,980**	**79,140**	**100.00**	**3.5**	**0.59**

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Table T - 22. Estimates of successful parties, number of fish caught, number of fish harvested and the harvest rate for different fish species taken from the Missouri River from the Iowa-Missouri state line to the mouth of the Platte River near Plattsmouth, Nebraska (Nebraska's Segment 2) for the period from January 3, 2004 through January 28, 2005.

Species	Successful Parties	Standard Error	Total Catch	Standard Error	Total Harvest	Standard Error	Harvest Rate (per 100 Hrs)	Standard Error
Paddlefish	0	0	0	0	0	0	0.00	0.00
Lake Sturgeon	780	510	790	510	19	15	0.03	0.02
Shovelnose Sturgeon	350	180	960	430	80	38	0.10	0.06
Pallid Sturgeon	31	17	90	60	40[a]	40[a]	0.06[a]	0.06[a]
Shortnose Gar	0	0	0	0	0	0	0.00	0.00
Spotted Gar	0	0	0	0	0	0	0.00	0.00
Longnose Gar	23	10	80	50	0	0	0.00	0.00
Gar sp/pref	0	0	0	0	0	0	0.00	0.00
Bowfin	0	0	0	0	0	0	0.00	0.00
Goldeye	4	3	4	3	0	0	0.00	0.00
Skipjack Herring	390	210	690	250	220	200	0.31	0.29
Gizzard Shad	0	0	0	0	0	0	0.00	0.00
Threadfin Shad	0	0	0	0	0	0	0.00	0.00
Trout sp/pref	0	0	0	0	0	0	0.00	0.00
Bigmouth Buffalo	18	10	90	50	90	50	0.13	0.08
Black Buffalo	0	0	0	0	0	0	0.00	0.00
Smallmouth Buffalo	90	50	1,760	1,070	1,760	1,070	2.46	1.59
Buffalo sp/pref	0	0	0	0	0	0	0.00	0.00
Quillback	0	0	0	0	0	0	0.00	0.00
River Carpsucker	8	7	8	7	8	7	0.01	0.01
Highfin Carpsucker	0	0	0	0	0	0	0.00	0.00
Carpsucker sp	0	0	0	0	0	0	0.00	0.00
Blue Sucker	0	0	0	0	0	0	0.00	0.00
White Sucker	0	0	0	0	0	0	0.00	0.00
Shorthead Redhorse	0	0	0	0	0	0	0.00	0.00
Carp	2,490	1,000	5,030	1,250	3,050	770	4.27	1.40
Grass Carp	21	10	21	10	7	6	0.01	0.01
Silver Carp	37	23	1,210	1,090	1,190	1,090	1.66	1.56
Bighead Carp	10	7	31	20	7	6	0.01	0.01

Table T - 22. Continued.

Species	Successful Parties	Standard Error	Total Catch	Standard Error	Total Harvest	Standard Error	Harvest Rate (per 100 Hrs)	Standard Error
Channel Catfish	3,000	590	7,580	1,880	5,090	1,650	7.12	2.75
Blue Catfish	120	35	160	50	130	39	0.18	0.07
Catfish sp/pref	0	0	0	0	0	0	0.00	0.00
Black Bullhead	0	0	0	0	0	0	0.00	0.00
Yellow Bullhead	0	0	0	0	0	0	0.00	0.00
Brown Bullhead	0	0	0	0	0	0	0.00	0.00
Bullhead sp/pref	0	0	0	0	0	0	0.00	0.00
Flathead Catfish	1,400	560	2,410	910	770	130	1.08	0.29
Grass Pickerel	0	0	0	0	0	0	0.00	0.00
Northern Pike	0	0	0	0	0	0	0.00	0.00
Eel	0	0	0	0	0	0	0.00	0.00
White Perch	0	0	0	0	0	0	0.00	0.00
White Bass	0	0	0	0	0	0	0.00	0.00
Striped Bass Hybrid	0	0	0	0	0	0	0.00	0.00
Yellow Bass	0	0	0	0	0	0	0.00	0.00
Striped Bass	0	0	0	0	0	0	0.00	0.00
Sauger	0	0	0	0	0	0	0.00	0.00
Walleye	0	0	0	0	0	0	0.00	0.00
Spotted Bass	0	0	0	0	0	0	0.00	0.00
Smallmouth Bass	0	0	0	0	0	0	0.00	0.00
Largemouth Bass	0	0	0	0	0	0	0.00	0.00
Warmouth	0	0	0	0	0	0	0.00	0.00
Green Sunfish	0	0	0	0	0	0	0.00	0.00
Bluegill	0	0	0	0	0	0	0.00	0.00
Black Crappie	0	0	0	0	0	0	0.00	0.00
White Crappie	0	0	0	0	0	0	0.00	0.00
Crappie sp/pref	0	0	0	0	0	0	0.00	0.00
Freshwater Drum	1,020	410	2,760	1,280	1,300	1,060	1.82	1.53
Fishing/anything	9	6	16	12	0	0	0.00	0.00
Fish Total	**11,710**	**1,840**	**23,680**	**3,230**	**13,760**	**2,610**	**19.24**	**5.46**

[a] Species is listed as a federal endangered species under the Endangered Species Act, therefore, harvest of this species was not legal. Estimate of harvest reflects what the survey clerk recorded as being reported by the interviewed public user. Return to page 179.

Table T - 23. Estimates of successful hunting parties, number of wildlife shot or trapped, number harvested and the harvest rate for different wildlife species taken by hunters on the Missouri River from the Iowa-Missouri state line to the mouth of the Platte River near Plattsmouth, Nebraska (Nebraska's Segment 2) for the period from January 3, 2004 through January 28, 2005.

Species	Successful Parties	Standard Error	Total Shot/ Trapped	Standard Error	Total Harvest	Standard Error	Harvest Rate (per 100 Hrs)	Standard Error
White-tailed Deer	920	880	930	880	930	880	0.54	0.54
Squirrel	0	0	0	0	0	0	0.00	0.00
Rabbit	0	0	0	0	0	0	0.00	0.00
Raccoon	80	25	320	100	320	100	0.19	0.08
Beaver	0	0	0	0	0	0	0.00	0.00
Mink	0	0	0	0	0	0	0.00	0.00
Bobcat	0	0	0	0	0	0	0.00	0.00
Red Fox	0	0	0	0	0	0	0.00	0.00
Opossum	0	0	0	0	0	0	0.00	0.00
Coyote	0	0	0	0	0	0	0.00	0.00
Mourning Dove	170	120	850	700	780	670	0.46	0.42
Bobwhite Quail	0	0	0	0	0	0	0.00	0.00
Crow	0	0	0	0	0	0	0.00	0.00
Turkey	650	650	650	650	650	650	0.38	0.40
Pheasant	18	17	40	38	40	38	0.02	0.02
Mallard	1,430	1,230	2,880	2,450	2,880	2,450	1.69	1.52
Wigeon	0	0	0	0	0	0	0.00	0.00
Blue-Winged Teal	0	0	0	0	0	0	0.00	0.00
Green-Winged Teal	0	0	0	0	0	0	0.00	0.00
Pintail	0	0	0	0	0	0	0.00	0.00
Shoveler	0	0	0	0	0	0	0.00	0.00
Gadwall	0	0	0	0	0	0	0.00	0.00
Wood Duck	0	0	0	0	0	0	0.00	0.00
Redhead	0	0	0	0	0	0	0.00	0.00
Ring-Necked Duck	0	0	0	0	0	0	0.00	0.00
Greater Scaup	0	0	0	0	0	0	0.00	0.00
Lesser Scaup	0	0	0	0	0	0	0.00	0.00
Goldeneye	0	0	0	0	0	0	0.00	0.00
Bufflehead	0	0	0	0	0	0	0.00	0.00

Table T - 23. Continued.

Species	Successful Parties	Standard Error	Total Shot/ Trapped	Standard Error	Total Harvest	Standard Error	Harvest Rate (per 100 Hrs)	Standard Error
Common Merganser	1,430	1,230	1,430	1,230	1,430	1,230	0.84	0.76
Other Ducks	0	0	0	0	0	0	0.00	0.00
Canada Goose	15	8	19	10	19	10	0.01	0.01
Snow Goose	0	0	0	0	0	0	0.00	0.00
Ross Goose	0	0	0	0	0	0	0.00	0.00
Coot	0	0	0	0	0	0	0.00	0.00
Woodcock	11	5	24	16	24	16	0.01	0.01
Turtle	3	3	3	3	0	0	0.00	0.00
Clam	0	0	0	0	0	0	0.00	0.00
Hunting/Unknown	0	0	0	0	0	0	0.00	0.00
Hunting Total	**16,170**	**3,680**	**7,150**	**3,040**	**7,080**	**3,030**	**4.16**	**2.13**
Frog	0	0	0	0	0	0	0.00	0.00
Frogging Total	**0**	**0**	**0**	**0**	**0**	**0**	**0.00**	**0.00**

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Table T - 24. Socio-demographic characteristics of Missouri River users from the Iowa-Missouri state line to the mouth of the Platte River near Plattsmouth, Nebraska (Nebraska's Segment 2) for the period from January 3, 2004 through January 28, 2005.

Characteristic	Estimate	Standard Error	Percent
Age			
0-11 Years Old	9,520	2,260	6.36
12-15 Years Old	6,770	2,470	4.52
16-17 Years Old	5,840	2,720	3.90
18-24 Years Old	23,370	4,500	15.61
25-34 Years Old	26,200	3,640	17.50
35-44 Years Old	38,320	5,530	25.59
45-64 Years Old	26,410	3,170	17.64
65 or Older	12,810	2,440	8.56
Unknown Age	490	430	0.33
Gender			
Male	120,020	9,680	80.15
Female	29,190	3,720	19.49
Unknown Gender	530	430	0.35
Race			
White	142,630	11,060	95.25
Black or African-American	500	270	0.34
Hispanic or Latino	3,440	1,360	2.30
Asian	640	410	0.43
American Indian	950	530	0.64
Other	780	780	0.52
Unknown race	790	490	0.53
Impairment			
No Impairment	141,960	11,210	94.80
Hearing Impaired	1,860	820	1.24
Visually Impaired	2,130	890	1.42
Learning Impaired	230	140	0.15
Mobility Impaired	1,930	720	1.29
Other Impairment	1,070	240	0.71
Unknown Impairment Status	580	430	0.39
Permit Ownership			
Owned a fishing or Hunting Permit	114,390	9,680	76.39
Did Not own a fishing or hunting permit	31,390	4,030	20.96
Unknown permit ownership status	3,960	1,730	2.64

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Table T - 25. Estimates of public use for the Missouri River from the mouth of the Platte River below Bellevue, Nebraska to just above N. P. Dodge Marina in N. P. Dodge Park in Omaha, Nebraska (Nebraska's Segment 3) for the period from January 3, 2004 through January 28, 2005.

	Individual-Visits			Hours			Average	
Activity	Estimate	Standard Error	Percent	Estimate	Standard Error	Percent	Length of Visits (Hrs)	Standard Error
Fishing								
Rod/Reel - Non-tournament	12,020	1,220	7.21	37,460	5,500	7.78	3.1	0.56
Oth. Methods - Non-tournament	170	140	0.10	250	220	0.05	1.5	1.86
Rod/Reel & Oth. Meths. - Non-tour.	240	180	0.14	580	500	0.12	2.4	2.77
Rod/Reel - Tournament	0	0	0.00	0	0	0.00	--	--
Oth. Methods - Tournament	0	0	0.00	0	0	0.00	--	--
Rod/Reel & Oth. Meths. - Tour.	11	11	0.01	70	60	0.01	6.4	8.18
Commercial	0	0	0.00	0	0	0.00	--	--
Snagging Paddlefish (Nebraska)	0	0	0.00	0	0	0.00	--	--
Collecting Bait	0	0	0.00	0	0	0.00	--	--
Fishing Subtotal	**12,420**	**1,230**	**7.45**	**38,350**	**5,510**	**7.96**	**3.1**	**0.54**
Hunting								
Deer, gun or muzzleloader	0	0	0.00	0	0	0.00	--	--
Deer, bow	130	90	0.08	190	130	0.04	1.5	1.42
Turkey	0	0	0.00	0	0	0.00	--	--
Waterfowl	0	0	0.00	0	0	0.00	--	--
Dove	0	0	0.00	0	0	0.00	--	--
Squirrel	0	0	0.00	0	0	0.00	--	--
Rabbit	0	0	0.00	0	0	0.00	--	--
Quail	0	0	0.00	0	0	0.00	--	--
Pheasant	0	0	0.00	0	0	0.00	--	--
Crow	0	0	0.00	0	0	0.00	--	--
Raccoon	0	0	0.00	0	0	0.00	--	--
Fox	0	0	0.00	0	0	0.00	--	--
Predator	0	0	0.00	0	0	0.00	--	--
Other Hunting	0	0	0.00	0	0	0.00	--	--
Hunting Subtotal	**130**	**90**	**0.08**	**190**	**130**	**0.04**	**1.46**	**1.42**

Table T - 25. Continued.

Activity	Individual-Visits Estimate	Individual-Visits Standard Error	Individual-Visits Percent	Hours Estimate	Hours Standard Error	Hours Percent	Average Length of Visits (Hrs)	Standard Error
Trapping	0	0	0.00	0	0	0.00	--	--
Frogging	0	0	0.00	0	0	0.00	--	--
Non-Consumptive Activities								
Camping, dept. site	140	90	0.08	1,330	880	0.28	9.5	8.80
Camping, other	3,840	900	2.30	68,850	20,010	14.30	17.9	6.68
Picnicking, dept. site	60	33	0.04	40	24	0.01	0.7	0.53
Picnicking, other	1,950	540	1.17	2,640	760	0.55	1.4	0.54
Swimming	3,420	1,090	2.05	6,010	2,600	1.25	1.8	0.94
Floating	980	720	0.59	2,450	2,120	0.51	2.5	2.85
Boating	65,240	4,540	39.14	276,760	23,480	57.46	4.2	0.47
Canoeing	130	60	0.08	190	110	0.04	1.5	1.12
Nature Study	4,040	540	2.42	3,020	680	0.63	0.7	0.20
Loafing	6,490	890	3.89	5,710	860	1.19	0.9	0.18
Sightseeing	40,060	3,130	24.04	20,040	1,830	4.16	0.5	0.06
Cottage Use	400	220	0.24	3,150	2,170	0.65	7.9	7.01
Off-road Vehicle	130	90	0.08	80	50	0.02	0.6	0.55
Gathering Products	1,580	290	0.95	1,600	330	0.33	1.0	0.28
Target Shooting	0	0	0.00	0	0	0.00	--	--
Rappelling	0	0	0.00	0	0	0.00	--	--
Caving	0	0	0.00	0	0	0.00	--	--
Waterskiing	580	260	0.35	790	460	0.16	1.4	1.02
Biking	3,910	790	2.35	5,330	1,510	1.11	1.4	0.47
Jet Skiing	3,660	730	2.20	10,260	1,880	2.13	2.8	0.76
Sunbathing	1,050	500	0.63	2,210	980	0.46	2.1	1.37
Partying	2,530	720	1.52	6,800	2,090	1.41	2.7	1.13
Hiking	990	260	0.59	1,320	340	0.27	1.3	0.49
Exercising	14,680	1,660	8.81	10,950	1,270	2.27	0.7	0.12
Preparing for Hunting Season	100	50	0.06	110	60	0.02	1.1	0.83
Tuning (or trying out) Boat and Motor	5,980	710	3.59	8,590	1,430	1.78	1.4	0.29

Table T - 25. Continued.

Activity	Individual-Visits Estimate	Individual-Visits Standard Error	Individual-Visits Percent	Hours Estimate	Hours Standard Error	Hours Percent	Average Length of Visits (Hrs)	Standard Error
Lewis and Clark Event and Trail Tour	260	220	0.16	150	120	0.03	0.6	0.68
Photography	940	590	0.56	1,480	1,330	0.31	1.6	1.71
Playground/Telephone/Restroom	1,500	420	0.90	2,260	1,080	0.47	1.5	0.83
Sporting Activities	330	180	0.20	550	360	0.11	1.7	1.44
Dog Training	0	0	0.00	0	0	0.00	--	--
Observed Paddlefish Snagging	0	0	0.00	0	0	0.00	--	--
Geocaching	0	0	0.00	0	0	0.00	--	--
Education Tour	0	0	0.00	0	0	0.00	--	--
Oregon & Calif. Trail Tour	0	0	0.00	0	0	0.00	--	--
Horseback Riding	0	0	0.00	0	0	0.00	--	--
Fireworks	0	0	0.00	0	0	0.00	--	--
Ice Skating	0	0	0.00	0	0	0.00	--	--
Arts & Crafts	0	0	0.00	0	0	0.00	--	--
Releasing Wildlife	0	0	0.00	0	0	0.00	--	--
Model Airplane Flying	0	0	0.00	0	0	0.00	--	--
Motorcycling	28	20	0.02	7	5	0.00	0.3	0.25
MO River Relief	0	0	0.00	0	0	0.00	--	--
Non-Consumptive Activities Subtotal	**151,210**	**6,490**	**90.72**	**442,680**	**33,490**	**91.91**	**2.93**	**0.25**
Undefined Use	620	190	0.37	400	110	0.08	0.6	0.27
Work Trip	260	120	0.16	630	300	0.13	2.4	1.65
Unknown	0	0	0.00	0	0	0.00	--	--
Overall Total	**166,670**	**7,020**	**100.00**	**481,620**	**34,270**	**100.00**	**2.9**	**0.24**

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Table T - 26. Estimates of successful parties, number of fish caught, number of fish harvested and the harvest rate for different fish species taken from the Missouri River from the mouth of the Platte River below Bellevue, Nebraska to just above N. P. Dodge Marina in N. P. Dodge Park in Omaha, Nebraska (Nebraska's Segment 3) for the period from January 3, 2004 through January 28, 2005.

Species	Successful Parties	Standard Error	Total Catch	Standard Error	Total Harvest	Standard Error	Harvest Rate (per 100 Hrs)	Standard Error
Paddlefish	0	0	0	0	0	0	0.00	0.00
Lake Sturgeon	0	0	0	0	0	0	0.00	0.00
Shovelnose Sturgeon	320	100	980	300	690	260	1.79	0.73
Pallid Sturgeon	60	60	60	60	0[a]	0[a]	0.00[a]	0.00[a]
Shortnose Gar	0	0	0	0	0	0	0.00	0.00
Spotted Gar	0	0	0	0	0	0	0.00	0.00
Longnose Gar	11	10	11	10	0	0	0.00	0.00
Gar sp/pref	0	0	0	0	0	0	0.00	0.00
Bowfin	0	0	0	0	0	0	0.00	0.00
Goldeye	290	120	340	120	0	0	0.00	0.00
Skipjack Herring	300	120	520	200	0	0	0.00	0.00
Gizzard Shad	0	0	0	0	0	0	0.00	0.00
Threadfin Shad	0	0	0	0	0	0	0.00	0.00
Trout sp/pref	130	30	550	160	520	160	1.36	0.46
Bigmouth Buffalo	0	0	0	0	0	0	0.00	0.00
Black Buffalo	7	6	14	13	0	0	0.00	0.00
Smallmouth Buffalo	21	17	21	17	4	4	0.01	0.01
Buffalo sp/pref	0	0	0	0	0	0	0.00	0.00
Quillback	0	0	0	0	0	0	0.00	0.00
River Carpsucker	11	10	11	10	0	0	0.00	0.00
Highfin Carpsucker	0	0	0	0	0	0	0.00	0.00
Carpsucker sp	0	0	0	0	0	0	0.00	0.00
Blue Sucker	0	0	0	0	0	0	0.00	0.00
White Sucker	0	0	0	0	0	0	0.00	0.00
Shorthead Redhorse	0	0	0	0	0	0	0.00	0.00
Carp	900	250	1,820	530	200	90	0.52	0.25
Grass Carp	0	0	0	0	0	0	0.00	0.00
Silver Carp	100	80	110	90	110	90	0.29	0.23
Bighead Carp	17	16	33	32	0	0	0.00	0.00

Table T - 26. Continued.

Species	Successful Parties	Standard Error	Total Catch	Standard Error	Total Harvest	Standard Error	Harvest Rate (per 100 Hrs)	Standard Error
Channel Catfish	2,150	460	14,760	6,020	5,270	2,680	13.74	7.26
Blue Catfish	33	32	70	60	70	60	0.17	0.17
Catfish sp/pref	0	0	0	0	0	0	0.00	0.00
Black Bullhead	9	8	70	60	0	0	0.00	0.00
Yellow Bullhead	60	31	140	80	16	16	0.04	0.04
Brown Bullhead	0	0	0	0	0	0	0.00	0.00
Bullhead sp/pref	0	0	0	0	0	0	0.00	0.00
Flathead Catfish	400	140	500	160	150	90	0.39	0.23
Grass Pickerel	0	0	0	0	0	0	0.00	0.00
Northern Pike	0	0	0	0	0	0	0.00	0.00
Eel	0	0	0	0	0	0	0.00	0.00
White Perch	0	0	0	0	0	0	0.00	0.00
White Bass	17	16	33	32	33	32	0.09	0.08
Striped Bass Hybrid	8	8	16	17	0	0	0.00	0.00
Yellow Bass	0	0	0	0	0	0	0.00	0.00
Striped Bass	7	7	7	7	0	0	0.00	0.00
Sauger	0	0	0	0	0	0	0.00	0.00
Walleye	8	8	8	8	0	0	0.00	0.00
Spotted Bass	0	0	0	0	0	0	0.00	0.00
Smallmouth Bass	0	0	0	0	0	0	0.00	0.00
Largemouth Bass	0	0	0	0	0	0	0.00	0.00
Warmouth	0	0	0	0	0	0	0.00	0.00
Green Sunfish	0	0	0	0	0	0	0.00	0.00
Bluegill	0	0	0	0	0	0	0.00	0.00
Black Crappie	0	0	0	0	0	0	0.00	0.00
White Crappie	27	21	380	390	80	80	0.22	0.21
Crappie sp/pref	0	0	0	0	0	0	0.00	0.00
Freshwater Drum	740	260	2,110	950	210	130	0.55	0.35
Fishing/anything	0	0	0	0	0	0	0.00	0.00
Fish Total	**7,150**	**650**	**22,560**	**6,150**	**7,360**	**2,710**	**19.18**	**7.57**

[a] Species is listed as a federal endangered species under the Endangered Species Act, therefore, harvest of this species was not legal. Estimate of harvest reflects what the survey clerk recorded as being reported by the interviewed public user.

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Table T - 27. Socio-demographic characteristics of Missouri River users from the mouth of the Platte River below Bellevue, Nebraska to just above N. P. Dodge Marina in N. P. Dodge Park in Omaha, Nebraska (Nebraska's Segment 3) for the period from January 3, 2004 through January 28, 2005. Return to page 181.

Characteristic	Estimate	Standard Error	Percent
Age			
0-11 Years Old	11,010	1,010	6.61
12-15 Years Old	5,180	490	3.11
16-17 Years Old	2,050	300	1.23
18-24 Years Old	12,200	1,220	7.32
25-34 Years Old	26,200	1,930	15.72
35-44 Years Old	42,830	2,350	25.70
45-64 Years Old	47,910	2,470	28.75
65 or Older	19,110	1,650	11.47
Unknown Age	190	80	0.11
Gender			
Male	111,940	4,620	67.16
Female	54,340	2,980	32.60
Unknown Gender	400	180	0.24
Race			
White	153,980	6,520	92.38
Black or African-American	3,720	580	2.23
Hispanic or Latino	5,850	990	3.51
Asian	1,010	310	0.61
American Indian	980	230	0.59
Other	440	250	0.27
Unknown race	690	220	0.41
Impairment			
No Impairment	153,480	6,510	92.08
Hearing Impaired	3,300	580	1.98
Visually Impaired	830	200	0.50
Learning Impaired	300	80	0.18
Mobility Impaired	4,430	560	2.65
Other Impairment	3,230	480	1.93
Unknown Impairment Status	1,120	300	0.67
Permit Ownership			
Owned a fishing or Hunting Permit	53,720	2,680	32.23
Did Not own a fishing or hunting permit	110,900	5,200	66.54
Unknown permit ownership status	2,060	530	1.23

Table T - 28. Estimates of recreational use at Boyer Chute and Desoto National Wildlife Refuges (Nebraska's Segment 4) for the period from April 24, 2004 through January 28, 2005.

	Individual-Visits			Hours			Average	
Activity	Estimate	Standard Error	Percent	Estimate	Standard Error	Percent	Length of Visits (Hrs)	Standard Error
Fishing								
Rod/Reel - Non-tournament	18,860	2,100	20.87	54,460	5,690	22.03	2.9	0.44
Oth. Methods - Non-tournament	530	320	0.59	1,530	1,010	0.62	2.9	2.58
Rod/Reel & Oth. Meths. - Non-tour.	290	160	0.32	560	440	0.23	1.9	1.87
Rod/Reel - Tournament	0	0	0.00	0	0	0.00	--	--
Oth. Methods - Tournament	0	0	0.00	0	0	0.00	--	--
Rod/Reel & Oth. Meths. - Tour.	0	0	0.00	0	0	0.00	--	--
Commercial	0	0	0.00	0	0	0.00	--	--
Snagging Paddlefish (Nebraska)	0	0	0.00	0	0	0.00	--	--
Collecting Bait	0	0	0.00	0	0	0.00	--	--
Fishing Subtotal	**19,680**	**2,280**	**21.77**	**56,560**	**6,330**	**22.88**	**2.9**	**0.46**
Hunting								
Deer, gun or muzzleloader	610	200	0.67	2,760	970	1.12	4.5	2.20
Deer, bow	0	0	0.00	0	0	0.00	--	--
Turkey	0	0	0.00	0	0	0.00	--	--
Waterfowl	0	0	0.00	0	0	0.00	--	--
Dove	0	0	0.00	0	0	0.00	--	--
Squirrel	0	0	0.00	0	0	0.00	--	--
Rabbit	0	0	0.00	0	0	0.00	--	--
Quail	0	0	0.00	0	0	0.00	--	--
Pheasant	0	0	0.00	0	0	0.00	--	--
Crow	0	0	0.00	0	0	0.00	--	--
Raccoon	0	0	0.00	0	0	0.00	--	--
Fox	0	0	0.00	0	0	0.00	--	--
Predator	0	0	0.00	0	0	0.00	--	--
Other Hunting	0	0	0.00	0	0	0.00	--	--
Hunting Subtotal	**610**	**200**	**0.67**	**2,760**	**970**	**1.12**	**4.52**	**2.20**

Table T - 28. Continued.

Activity	Individual-Visits Estimate	Individual-Visits Standard Error	Individual-Visits Percent	Hours Estimate	Hours Standard Error	Hours Percent	Average Length of Visits (Hrs)	Standard Error
Trapping	0	0	0.00	0	0	0.00	--	--
Frogging	0	0	0.00	0	0	0.00	--	--
Non-Consumptive Activities								
Camping, dept. site	1,840	950	2.04	53,370	28,770	21.59	29.0	21.60
Camping, other	1,330	420	1.47	41,960	15,130	16.97	31.5	15.24
Picnicking, dept. site	1,180	520	1.31	2,020	960	0.82	1.7	1.11
Picnicking, other	1,010	350	1.12	1,510	600	0.61	1.5	0.79
Swimming	0	0	0.00	0	0	0.00	--	--
Floating	0	0	0.00	0	0	0.00	--	--
Boating	340	160	0.38	1,100	560	0.44	3.2	2.26
Canoeing	400	300	0.44	1,000	670	0.40	2.5	2.49
Nature Study	8,710	1,080	9.64	10,090	1,300	4.08	1.2	0.21
Loafing	400	160	0.44	380	160	0.15	1.0	0.54
Sightseeing	44,190	3,150	48.89	46,260	4,740	18.71	1.0	0.13
Cottage Use	0	0	0.00	0	0	0.00	--	--
Off-road Vehicle	0	0	0.00	0	0	0.00	--	--
Gathering Products	2,310	1,410	2.56	5,830	3,380	2.36	2.5	2.12
Target Shooting	100	70	0.11	190	140	0.08	1.9	2.07
Rappelling	0	0	0.00	0	0	0.00	--	--
Caving	51	48	0.06	76	71	0.03	1.5	1.99
Waterskiing	0	0	0.00	0	0	0.00	--	--
Biking	3,970	930	4.39	6,320	1,890	2.56	1.6	0.60
Jet Skiing	0	0	0.00	0	0	0.00	--	--
Sunbathing	0	0	0.00	0	0	0.00	--	--
Partying	80	70	0.09	310	290	0.13	3.9	5.30
Hiking	6,280	1,030	6.95	8,470	1,520	3.43	1.3	0.33
Exercising	2,030	610	2.25	2,500	920	1.01	1.2	0.58
Preparing for Hunting Season	1,100	480	1.22	1,900	730	0.77	1.7	1.01
Tuning (or trying out) Boat and Motor	350	140	0.39	390	230	0.16	1.1	0.79

Table T - 28. Continued.

Activity	Individual-Visits Estimate	Individual-Visits Standard Error	Individual-Visits Percent	Hours Estimate	Hours Standard Error	Hours Percent	Average Length of Visits (Hrs)	Standard Error
Lewis and Clark Event and Trail Tour	380	370	0.42	290	280	0.12	0.8	1.05
Photography	2,090	470	2.31	2,440	540	0.99	1.2	0.37
Playground/Telephone/Restroom	0	0	0.00	0	0	0.00	--	--
Sporting Activities	50	50	0.06	100	90	0.04	2.0	2.60
Dog Training	0	0	0.00	0	0	0.00	--	--
Observed Paddlefish Snagging	0	0	0.00	0	0	0.00	--	--
Geocaching	36	37	0.04	36	37	0.01	1.0	1.45
Education Tour	50	50	0.06	80	80	0.03	1.6	2.15
Oregon & Calif. Trail Tour	0	0	0.00	0	0	0.00	--	--
Horseback Riding	0	0	0.00	0	0	0.00	--	--
Fireworks	0	0	0.00	0	0	0.00	--	--
Ice Skating	0	0	0.00	0	0	0.00	--	--
Arts & Crafts	0	0	0.00	0	0	0.00	--	--
Releasing Wildlife	0	0	0.00	0	0	0.00	--	--
Model Airplane Flying	0	0	0.00	0	0	0.00	--	--
Motorcycling	0	0	0.00	0	0	0.00	--	--
MO River Relief	0	0	0.00	0	0	0.00	--	--
Non-Consumptive Activities Subtotal	**69,450**	**4,300**	**76.84**	**186,610**	**33,000**	**75.48**	**2.69**	**0.50**
Undefined Use	1,460	310	1.62	1,320	440	0.53	0.9	0.36
Work Trip	660	220	0.73	460	160	0.19	0.7	0.33
Unknown	0	0	0.00	0	0	0.00	--	--
Overall Total	**90,380**	**5,020**	**100.00**	**247,240**	**31,670**	**100.00**	**2.7**	**0.38**

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Table T - 29. Estimates of successful parties, number of fish caught, number of fish harvested and the harvest rate for different fish species taken from Boyer Chute and DeSoto National Wildlife Refuges (Nebraska's Segment 4) for the period from April 24, 2004 through January 28, 2005.

Species	Successful Parties	Standard Error	Total Catch	Standard Error	Total Harvest	Standard Error	Harvest Rate (per 100 Hrs)	Standard Error
Paddlefish	0	0	0	0	0	0	0.00	0.00
Lake Sturgeon	0	0	0	0	0	0	0.00	0.00
Shovelnose Sturgeon	0	0	0	0	0	0	0.00	0.00
Pallid Sturgeon	0	0	0	0	0[a]	0[a]	0.00[a]	0.00[a]
Shortnose Gar	0	0	0	0	0	0	0.00	0.00
Spotted Gar	0	0	0	0	0	0	0.00	0.00
Longnose Gar	0	0	0	0	0	0	0.00	0.00
Gar sp/pref	0	0	0	0	0	0	0.00	0.00
Bowfin	0	0	0	0	0	0	0.00	0.00
Goldeye	0	0	0	0	0	0	0.00	0.00
Skipjack Herring	0	0	0	0	0	0	0.00	0.00
Gizzard Shad	0	0	0	0	0	0	0.00	0.00
Threadfin Shad	0	0	0	0	0	0	0.00	0.00
Trout sp/pref	0	0	0	0	0	0	0.00	0.00
Bigmouth Buffalo	0	0	0	0	0	0	0.00	0.00
Black Buffalo	0	0	0	0	0	0	0.00	0.00
Smallmouth Buffalo	0	0	0	0	0	0	0.00	0.00
Buffalo sp/pref	0	0	0	0	0	0	0.00	0.00
Quillback	0	0	0	0	0	0	0.00	0.00
River Carpsucker	0	0	0	0	0	0	0.00	0.00
Highfin Carpsucker	0	0	0	0	0	0	0.00	0.00
Carpsucker sp	0	0	0	0	0	0	0.00	0.00
Blue Sucker	0	0	0	0	0	0	0.00	0.00
White Sucker	0	0	0	0	0	0	0.00	0.00
Shorthead Redhorse	0	0	0	0	0	0	0.00	0.00
Carp	590	230	1,110	540	570	420	1.00	0.75
Grass Carp	40	40	80	80	80	80	0.14	0.15
Silver Carp	0	0	0	0	0	0	0.00	0.00
Bighead Carp	0	0	0	0	0	0	0.00	0.00

Table T - 29. Continued.

Species	Successful Parties	Standard Error	Total Catch	Standard Error	Total Harvest	Standard Error	Harvest Rate (per 100 Hrs)	Standard Error
Channel Catfish	360	110	870	400	280	130	0.49	0.24
Blue Catfish	0	0	0	0	0	0	0.00	0.00
Catfish sp/pref	0	0	0	0	0	0	0.00	0.00
Black Bullhead	0	0	0	0	0	0	0.00	0.00
Yellow Bullhead	110	110	230	210	0	0	0.00	0.00
Brown Bullhead	0	0	0	0	0	0	0.00	0.00
Bullhead sp/pref	0	0	0	0	0	0	0.00	0.00
Flathead Catfish	210	150	210	150	0	0	0.00	0.00
Grass Pickerel	0	0	0	0	0	0	0.00	0.00
Northern Pike	0	0	0	0	0	0	0.00	0.00
Eel	0	0	0	0	0	0	0.00	0.00
White Perch	0	0	0	0	0	0	0.00	0.00
White Bass	140	80	140	80	80	60	0.13	0.11
Striped Bass Hybrid	50	50	140	150	0	0	0.00	0.00
Yellow Bass	50	50	50	50	0	0	0.00	0.00
Striped Bass	0	0	0	0	0	0	0.00	0.00
Sauger	0	0	0	0	0	0	0.00	0.00
Walleye	230	140	1,660	1,120	0	0	0.00	0.00
Spotted Bass	0	0	0	0	0	0	0.00	0.00
Smallmouth Bass	0	0	0	0	0	0	0.00	0.00
Largemouth Bass	690	180	1,290	260	460	400	0.82	0.70
Warmouth	0	0	0	0	0	0	0.00	0.00
Green Sunfish	0	0	0	0	0	0	0.00	0.00
Bluegill	560	220	1,540	780	120	70	0.22	0.12
Black Crappie	2,110	400	16,790	3,310	7,140	3,040	12.63	5.57
White Crappie	530	280	2,500	2,310	500	230	0.89	0.43
Crappie sp/pref	0	0	0	0	0	0	0.00	0.00
Freshwater Drum	490	160	1,060	550	130	70	0.24	0.12
Fishing/anything	340	150	440	200	310	190	0.55	0.35
Fish Total	**10,250**	**1,340**	**28,110**	**4,370**	**9,670**	**3,120**	**17.11**	**5.84**

[a] Species is listed as a federal endangered species under the Endangered Species Act, therefore, harvest of this species was not legal. Estimate of harvest reflects what the survey clerk recorded as being reported by the interviewed public user.

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Table T - 30. Socio-demographic characteristics of Missouri River users of Boyer Chute and DeSoto National Wildlife Refuges (Nebraska's Segment 4) for the period from April 24, 2004 through January 28, 2005. Return to page 183.

Characteristic	Estimate	Standard Error	Percent
Age			
0-11 Years Old	9,030	1,080	9.99
12-15 Years Old	3,060	520	3.38
16-17 Years Old	1,050	290	1.16
18-24 Years Old	4,540	600	5.02
25-34 Years Old	9,420	1,100	10.43
35-44 Years Old	13,510	1,280	14.95
45-64 Years Old	30,300	1,730	33.52
65 or Older	19,480	1,440	21.55
Unknown Age	0	0	0.00
Gender			
Male	54,410	2,960	60.20
Female	35,970	2,420	39.80
Unknown Gender	0	0	0.00
Race			
White	84,790	5,080	93.82
Black or African-American	3,500	650	3.88
Hispanic or Latino	790	290	0.88
Asian	560	180	0.61
American Indian	26	27	0.03
Other	80	60	0.09
Unknown race	630	510	0.69
Impairment			
No Impairment	84,320	5,200	93.29
Hearing Impaired	1,760	480	1.94
Visually Impaired	330	230	0.37
Learning Impaired	450	230	0.50
Mobility Impaired	2,460	470	2.72
Other Impairment	390	130	0.43
Unknown Impairment Status	670	580	0.74
Permit Ownership			
Owned a fishing or Hunting Permit	35,850	2,580	39.67
Did Not own a fishing or hunting permit	54,400	3,210	60.19
Unknown permit ownership status	130	80	0.15

Table T - 31. Estimates of public use for the Missouri River from Wilson Island Conservation Area below Blair, Nebraska to just south of Dakota City, Nebraska (Nebraska's Segment 5) for the period from January 3, 2004 through January 28, 2005.

	Individual-Visits			Hours			Average	
Activity	Estimate	Standard Error	Percent	Estimate	Standard Error	Percent	Length of Visits (Hrs)	Standard Error
Fishing								
Rod/Reel - Non-tournament	24,310	2,830	18.62	78,100	11,650	6.43	3.2	0.61
Oth. Methods - Non-tournament	590	120	0.45	840	180	0.07	1.4	0.41
Rod/Reel & Oth. Meths. - Non-tour.	230	70	0.18	840	320	0.07	3.7	1.79
Rod/Reel - Tournament	160	100	0.12	760	480	0.06	4.8	4.16
Oth. Methods - Tournament	12	9	0.01	60	50	0.00	5.0	5.55
Rod/Reel & Oth. Meths. - Tour.	0	0	0.00	0	0	0.00	--	--
Commercial	70	40	0.05	80	50	0.01	1.1	1.00
Snagging Paddlefish (Nebraska)	17	9	0.01	38	22	0.00	2.2	1.71
Collecting Bait	15	10	0.01	12	8	0.00	0.8	0.77
Fishing Subtotal	25,380	2,830	**19.44**	80,730	11,660	**6.65**	**3.2**	**0.58**
Hunting								
Deer, gun or muzzleloader	6,710	3,450	5.14	126,160	113,050	10.39	18.8	19.44
Deer, bow	1,360	780	1.04	5,890	3,240	0.49	4.3	3.44
Turkey	1,280	1,190	0.98	5,170	4,740	0.43	4.0	5.25
Waterfowl	6,940	3,530	5.32	38,930	23,120	3.21	5.6	4.39
Dove	0	0	0.00	0	0	0.00	--	--
Squirrel	610	610	0.47	1,210	1,210	0.10	2.0	2.83
Rabbit	9	8	0.01	17	16	0.00	1.9	2.59
Quail	0	0	0.00	0	0	0.00	--	--
Pheasant	570	280	0.44	1,150	560	0.09	2.0	1.39
Crow	0	0	0.00	0	0	0.00	--	--
Raccoon	0	0	0.00	0	0	0.00	--	--
Fox	0	0	0.00	0	0	0.00	--	--
Predator	240	140	0.18	720	430	0.06	3.0	2.52
Other Hunting	0	0	0.00	0	0	0.00	--	--
Hunting Subtotal	17,710	4,810	**13.56**	179,230	112,800	**14.76**	**10.12**	**6.94**

Table T - 31. Continued.

Activity	Individual-Visits Estimate	Individual-Visits Standard Error	Individual-Visits Percent	Hours Estimate	Hours Standard Error	Hours Percent	Average Length of Visits (Hrs)	Standard Error
Trapping	17	15	0.01	17	15	0.00	1.0	1.25
Frogging	0	0	0.00	0	0	0.00	--	--
Non-Consumptive Activities								
Camping, dept. site	12,950	2,810	9.92	662,220	220,580	54.55	51.1	20.33
Camping, other	2,720	710	2.08	51,680	13,440	4.26	19.0	7.01
Picnicking, dept. site	1,120	190	0.86	1,120	220	0.09	1.0	0.26
Picnicking, other	1,450	370	1.11	1,710	520	0.14	1.2	0.47
Swimming	240	110	0.18	750	420	0.06	3.1	2.25
Floating	1,470	450	1.13	3,410	980	0.28	2.3	0.97
Boating	20,320	1,810	15.56	107,390	11,500	8.85	5.3	0.74
Canoeing	260	90	0.20	4,230	1,870	0.35	16.3	9.07
Nature Study	1,050	330	0.80	5,150	3,560	0.42	4.9	3.73
Loafing	4,320	700	3.31	17,910	8,640	1.48	4.1	2.11
Sightseeing	28,780	3,370	22.04	36,440	8,440	3.00	1.3	0.33
Cottage Use	180	80	0.14	3,910	1,830	0.32	21.7	13.34
Off-road Vehicle	320	220	0.25	1,430	1,090	0.12	4.5	4.54
Gathering Products	6,880	1,750	5.27	11,840	3,030	0.98	1.7	0.62
Target Shooting	50	36	0.04	70	50	0.01	1.4	1.37
Rappelling	0	0	0.00	0	0	0.00	--	--
Caving	0	0	0.00	0	0	0.00	--	--
Waterskiing	190	60	0.15	430	150	0.04	2.3	1.11
Biking	1,330	390	1.02	8,470	4,100	0.70	6.4	3.62
Jet Skiing	580	140	0.44	1,540	330	0.13	2.7	0.86
Sunbathing	410	280	0.31	730	550	0.06	1.8	1.79
Partying	2,410	500	1.85	11,240	3,060	0.93	4.7	1.60
Hiking	1,370	390	1.05	3,410	1,260	0.28	2.5	1.16
Exercising	2,670	460	2.05	1,990	440	0.16	0.7	0.21
Preparing for Hunting Season	7,030	1,770	5.38	7,780	2,030	0.64	1.1	0.40
Tuning (or trying out) Boat and Motor	1,150	190	0.88	1,550	390	0.13	1.3	0.40

Table T - 31. Continued.

Activity	Individual-Visits Estimate	Individual-Visits Standard Error	Individual-Visits Percent	Hours Estimate	Hours Standard Error	Hours Percent	Average Length of Visits (Hrs)	Standard Error
Lewis and Clark Event Trail Tour	160	100	0.12	250	140	0.02	1.6	1.25
Photography	1,740	1,570	1.33	2,500	2,350	0.21	1.4	1.87
Playground/Telephone/Restroom	450	130	0.34	1,300	650	0.11	2.9	1.67
Sporting Activities	290	190	0.22	250	120	0.02	0.9	0.71
Dog Training	0	0	0.00	0	0	0.00	--	--
Observed Paddlefish Snagging	0	0	0.00	0	0	0.00	--	--
Geocaching	0	0	0.00	0	0	0.00	--	--
Education Tour	0	0	0.00	0	0	0.00	--	--
Oregon & Calif. Trail Tour	0	0	0.00	0	0	0.00	--	--
Horseback Riding	13	13	0.01	26	25	0.00	2.0	2.72
Fireworks	50	40	0.04	110	90	0.01	2.2	2.33
Ice Skating	0	0	0.00	0	0	0.00	--	--
Arts & Crafts	0	0	0.00	0	0	0.00	--	--
Releasing Wildlife	13	10	0.01	5	4	0.00	0.4	0.43
Model Airplane Flying	0	0	0.00	0	0	0.00	--	--
Motorcycling	0	0	0.00	0	0	0.00	--	--
MO River Relief	0	0	0.00	0	0	0.00	--	--
Non-Consumptive Activities Subtotal	91,200	5,980	**69.85**	950,820	227,340	**78.32**	**10.43**	**2.58**
Undefined Use	1,510	800	1.16	3,080	1,640	0.25	2.0	1.54
Work Trip	80	39	0.06	450	270	0.04	5.6	4.61
Unknown	70	50	0.05	110	100	0.01	1.6	1.86
Overall Total	**130,560**	**8,650**	**100.00**	**1,213,990**	**295,190**	**100.00**	**9.3**	**2.34**

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Table T - 32. Estimates of successful parties, number of fish caught, number of fish harvested and the harvest rate for different fish species taken from the Missouri River from Wilson Island Conservation Area below Blair, Nebraska to just south of Dakota City, Nebraska (Nebraska's Segment 5) for the period from January 3, 2004 through January 28, 2005.

Species	Successful Parties	Standard Error	Total Catch	Standard Error	Total Harvest	Standard Error	Harvest Rate (per 100 Hrs)	Standard Error
Paddlefish	5	5	5	5	5	5	0.01	0.01
Lake Sturgeon	31	15	70	34	0	0	0.00	0.00
Shovelnose Sturgeon	460	200	710	230	174	107	0.22	0.14
Pallid Sturgeon	90	60	330	240	0[a]	0[a]	0.00[a]	0.00[a]
Shortnose Gar	35	13	60	29	15	8	0.02	0.01
Spotted Gar	0	0	0	0	0	0	0.00	0.00
Longnose Gar	31	17	31	17	0	0	0.00	0.00
Gar sp/pref	0	0	0	0	0	0	0.00	0.00
Bowfin	10	9	29	27	29	27	0.04	0.03
Goldeye	550	410	1,050	810	8	8	0.01	0.01
Skipjack Herring	630	400	1,780	1,200	60	50	0.08	0.06
Gizzard Shad	0	0	0	0	0	0	0.00	0.00
Threadfin Shad	0	0	0	0	0	0	0.00	0.00
Trout sp/pref	0	0	0	0	0	0	0.00	0.00
Bigmouth Buffalo	180	120	180	120	60	36	0.08	0.05
Black Buffalo	4	3	4	3	0	0	0.00	0.00
Smallmouth Buffalo	15	11	21	15	0	0	0.00	0.00
Buffalo sp/pref	0	0	0	0	0	0	0.00	0.00
Quillback	7	7	7	7	7	7	0.01	0.01
River Carpsucker	90	90	280	280	90	90	0.11	0.11
Highfin Carpsucker	0	0	0	0	0	0	0.00	0.00
Carpsucker sp	10	10	20	20	0	0	0.00	0.00
Blue Sucker	13	11	50	40	50	40	0.07	0.05
White Sucker	0	0	0	0	0	0	0.00	0.00
Shorthead Redhorse	130	120	130	120	0	0	0.00	0.00
Carp	1,730	260	3,820	540	2,210	380	2.74	0.61
Grass Carp	70	22	280	110	160	90	0.19	0.11
Silver Carp	24	8	90	38	21	18	0.03	0.02
Bighead Carp	38	20	150	100	140	100	0.18	0.13

Table T - 32. Continued.

Species	Successful Parties	Standard Error	Total Catch	Standard Error	Total Harvest	Standard Error	Harvest Rate (per 100 Hrs)	Standard Error
Channel Catfish	3,840	760	9,740	1,850	5,130	1,230	6.36	1.78
Blue Catfish	40	17	73	41	29	15	0.04	0.02
Catfish sp/pref	0	0	0	0	0	0	0.00	0.00
Black Bullhead	6	6	6	6	0	0	0.00	0.00
Yellow Bullhead	130	100	510	390	440	390	0.54	0.48
Brown Bullhead	0	0	0	0	0	0	0.00	0.00
Bullhead sp/pref	0	0	0	0	0	0	0.00	0.00
Flathead Catfish	610	190	1,080	450	880	430	1.09	0.55
Grass Pickerel	0	0	0	0	0	0	0.00	0.00
Northern Pike	0	0	0	0	0	0	0.00	0.00
Eel	6	6	6	6	6	6	0.01	0.01
White Perch	19	14	34	28	34	28	0.04	0.04
White Bass	40	25	80	40	0	0	0.00	0.00
Striped Bass Hybrid	120	90	120	90	16	16	0.02	0.02
Yellow Bass	0	0	0	0	0	0	0.00	0.00
Striped Bass	14	12	28	24	0	0	0.00	0.00
Sauger	50	29	80	40	70	36	0.08	0.05
Walleye	320	150	640	410	250	130	0.31	0.17
Spotted Bass	0	0	0	0	0	0	0.00	0.00
Smallmouth Bass	0	0	0	0	0	0	0.00	0.00
Largemouth Bass	50	27	110	70	60	50	0.08	0.06
Warmouth	0	0	0	0	0	0	0.00	0.00
Green Sunfish	0	0	0	0	0	0	0.00	0.00
Bluegill	40	18	170	90	170	90	0.21	0.11
Black Crappie	190	110	1,050	610	680	510	0.84	0.64
White Crappie	70	40	450	260	190	190	0.24	0.24
Crappie sp/pref	0	0	0	0	0	0	0.00	0.00
Freshwater Drum	1,930	340	4,640	990	1,340	440	1.66	0.59
Fishing/anything	30	19	47	28	0	0	0.00	0.00
Fish Total	**13,950**	**1,490**	**27,940**	**2,830**	**12,320**	**1,600**	**15.27**	**2.96**

[a] Species is listed as a federal endangered species under the Endangered Species Act, therefore, harvest of this species was not legal. Estimate of harvest reflects what the survey clerk recorded as being reported by the interviewed public user.

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Table T - 33. Estimates of successful hunting parties, number of wildlife shot or trapped, number harvested and the harvest rate for different wildlife species taken by hunters on the Missouri River from Wilson Island Conservation Area below Blair, Nebraska to just south of Dakota City, Nebraska (Nebraska's Segment 5) for the period from January 3, 2004 through January 28, 2005.

Species	Successful Parties	Standard Error	Total Shot/ Trapped	Standard Error	Total Harvest	Standard Error	Harvest Rate (per 100 Hrs)	Standard Error
White-tailed Deer	1,380	990	1,380	990	1,380	990	0.77	0.74
Squirrel	610	610	610	610	610	610	0.34	0.40
Rabbit	0	0	0	0	0	0	0.00	0.00
Raccoon	0	0	0	0	0	0	0.00	0.00
Beaver	0	0	0	0	0	0	0.00	0.00
Mink	0	0	0	0	0	0	0.00	0.00
Bobcat	0	0	0	0	0	0	0.00	0.00
Red Fox	0	0	0	0	0	0	0.00	0.00
Opossum	0	0	0	0	0	0	0.00	0.00
Coyote	0	0	0	0	0	0	0.00	0.00
Mourning Dove	0	0	0	0	0	0	0.00	0.00
Bobwhite Quail	0	0	0	0	0	0	0.00	0.00
Crow	0	0	0	0	0	0	0.00	0.00
Turkey	0	0	0	0	0	0	0.00	0.00
Pheasant	0	0	0	0	0	0	0.00	0.00
Mallard	1,910	1,280	2,910	2,050	2,910	2,050	1.62	1.53
Wigeon	100	90	100	90	100	90	0.06	0.06
Blue-Winged Teal	610	610	1,820	1,820	1,820	1,820	1.01	1.20
Green-Winged Teal	8	7	8	7	8	7	0.00	0.00
Pintail	0	0	0	0	0	0	0.00	0.00
Shoveler	0	0	0	0	0	0	0.00	0.00
Gadwall	5	5	5	5	5	5	0.00	0.00
Wood Duck	15	12	15	12	15	12	0.01	0.01
Redhead	0	0	0	0	0	0	0.00	0.00
Ring-Necked Duck	0	0	0	0	0	0	0.00	0.00
Greater Scaup	0	0	0	0	0	0	0.00	0.00
Lesser Scaup	0	0	0	0	0	0	0.00	0.00
Goldeneye	0	0	0	0	0	0	0.00	0.00
Bufflehead	0	0	0	0	0	0	0.00	0.00

Table T - 33. Continued.

Species	Successful Parties	Standard Error	Total Shot/ Trapped	Standard Error	Total Harvest	Standard Error	Harvest Rate (per 100 Hrs)	Standard Error
Common Merganser	0	0	0	0	0	0	0.00	0.00
Other Ducks	0	0	0	0	0	0	0.00	0.00
Canada Goose	0	0	0	0	0	0	0.00	0.00
Snow Goose	0	0	0	0	0	0	0.00	0.00
Ross Goose	0	0	0	0	0	0	0.00	0.00
Coot	0	0	0	0	0	0	0.00	0.00
Woodcock	0	0	0	0	0	0	0.00	0.00
Turtle	22	15	33	25	23	24	0.01	0.02
Clam	0	0	0	0	0	0	0.00	0.00
Hunting/Unknown	0	0	0	0	0	0	0.00	0.00
Hunting Total	**9,330**	**2,230**	**6,880**	**2,980**	**6,870**	**2,980**	**3.83**	**2.93**
Frog	0	0	0	0	0	0	0.00	0.00
Frogging Total	**0**	**0**	**0**	**0**	**0**	**0**	**0.00**	**0.00**

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Table T - 34. Socio-demographic characteristics of Missouri River users from Wilson Island Conservation Area below Blair, Nebraska to just south of Dakota City, Nebraska (Nebraska's Segment 5) for the period from January 3, 2004 through January 28, 2005. Return to page 184.

Characteristic	Estimate	Standard Error	Percent
Age			
0-11 Years Old	7,820	1,250	5.99
12-15 Years Old	3,440	430	2.63
16-17 Years Old	4,700	1,730	3.60
18-24 Years Old	10,650	1,630	8.15
25-34 Years Old	18,830	2,670	14.42
35-44 Years Old	22,100	2,240	16.93
45-64 Years Old	44,870	3,960	34.37
65 or Older	17,640	2,470	13.51
Unknown Age	510	220	0.39
Gender			
Male	94,520	7,140	72.40
Female	35,740	3,000	27.37
Unknown Gender	300	110	0.23
Race			
White	126,670	8,440	97.02
Black or African-American	1,040	430	0.80
Hispanic or Latino	260	70	0.20
Asian	90	40	0.07
American Indian	1,800	750	1.37
Other	30	10	0.02
Unknown race	680	160	0.52
Impairment			
No Impairment	119,870	7,990	91.81
Hearing Impaired	1,100	360	0.84
Visually Impaired	170	100	0.13
Learning Impaired	40	20	0.03
Mobility Impaired	5,810	2,050	4.45
Other Impairment	1,900	680	1.46
Unknown Impairment Status	1,670	960	1.28
Permit Ownership			
Owned a fishing or Hunting Permit	75,920	6,610	58.15
Did Not own a fishing or hunting permit	52,910	4,200	40.52
Unknown permit ownership status	1,740	540	1.33

Table T - 35. Estimates of recreational use for the Missouri River from just south of Dakota City, Nebraska to above Chris Larsen Park boat ramp at Sioux City, Iowa (Nebraska's Segment 6) for the period from January 3, 2004 through January 28, 2005.

	Individual-Visits			Hours			Average	
Activity	Estimate	Standard Error	Percent	Estimate	Standard Error	Percent	Length of Visits (Hrs)	Standard Error
Fishing								
Rod/Reel - Non-tournament	5,520	340	16.42	15,740	1,150	17.32	2.9	0.27
Oth. Methods - Non-tournament	60	19	0.18	330	110	0.36	5.5	2.83
Rod/Reel & Oth. Meths. - Non-tour.	22	15	0.07	80	50	0.09	3.6	3.40
Rod/Reel - Tournament	0	0	0.00	0	0	0.00	--	--
Oth. Methods - Tournament	0	0	0.00	0	0	0.00	--	--
Rod/Reel & Oth. Meths. - Tour.	0	0	0.00	0	0	0.00	--	--
Commercial	0	0	0.00	0	0	0.00	--	--
Snagging Paddlefish (Nebraska)	0	0	0.00	0	0	0.00	--	--
Collecting Bait	0	0	0.00	0	0	0.00	--	--
Fishing Subtotal	**5,600**	**340**	**16.66**	**16,150**	**1,150**	**17.77**	**2.9**	**0.27**
Hunting								
Deer, gun or muzzleloader	0	0	0.00	0	0	0.00	--	--
Deer, bow	0	0	0.00	0	0	0.00	--	--
Turkey	0	0	0.00	0	0	0.00	--	--
Waterfowl	0	0	0.00	0	0	0.00	--	--
Dove	0	0	0.00	0	0	0.00	--	--
Squirrel	0	0	0.00	0	0	0.00	--	--
Rabbit	0	0	0.00	0	0	0.00	--	--
Quail	0	0	0.00	0	0	0.00	--	--
Pheasant	0	0	0.00	0	0	0.00	--	--
Crow	0	0	0.00	0	0	0.00	--	--
Raccoon	0	0	0.00	0	0	0.00	--	--
Fox	0	0	0.00	0	0	0.00	--	--
Predator	0	0	0.00	0	0	0.00	--	--
Other Hunting	0	0	0.00	0	0	0.00	--	--
Hunting Subtotal	**0**	**0**	**0.00**	**0**	**0**	**0.00**	--	--

Table T - 35. Continued.

Activity	Individual-Visits Estimate	Individual-Visits Standard Error	Individual-Visits Percent	Hours Estimate	Hours Standard Error	Hours Percent	Average Length of Visits (Hrs)	Standard Error
Trapping	0	0	0.00	0	0	0.00	--	--
Frogging	0	0	0.00	0	0	0.00	--	--
Non-Consumptive Activities								
Camping, dept. site	0	0	0.00	0	0	0.00	--	--
Camping, other	20	18	0.06	490	440	0.54	24.5	30.56
Picnicking, dept. site	10	10	0.03	10	10	0.01	1.0	1.33
Picnicking, other	300	100	0.89	280	90	0.31	0.9	0.41
Swimming	0	0	0.00	0	0	0.00	--	--
Floating	610	220	1.81	1,660	480	1.83	2.7	1.24
Boating	15,190	970	45.19	54,250	4,420	59.69	3.6	0.37
Canoeing	140	34	0.42	950	230	1.05	6.8	2.37
Nature Study	200	70	0.60	190	70	0.21	1.0	0.48
Loafing	2,680	610	7.97	2,110	450	2.32	0.8	0.24
Sightseeing	3,120	440	9.28	1,940	270	2.13	0.6	0.12
Cottage Use	0	0	0.00	0	0	0.00	--	--
Off-road Vehicle	0	0	0.00	0	0	0.00	--	--
Gathering Products	260	70	0.77	700	220	0.77	2.7	1.11
Target Shooting	0	0	0.00	0	0	0.00	--	--
Rappelling	0	0	0.00	0	0	0.00	--	--
Caving	0	0	0.00	0	0	0.00	--	--
Waterskiing	80	50	0.24	330	170	0.36	4.1	2.90
Biking	920	300	2.74	1,610	650	1.77	1.8	0.91
Jet Skiing	470	100	1.40	1,330	320	1.46	2.8	0.91
Sunbathing	80	50	0.24	80	50	0.09	1.0	0.93
Partying	130	70	0.39	710	440	0.78	5.5	4.26
Hiking	300	90	0.89	410	120	0.45	1.4	0.57
Exercising	5,200	730	15.47	6,100	1,080	6.71	1.2	0.26
Preparing for Hunting Season	44	26	0.13	100	60	0.11	2.3	1.88
Tuning (or trying out) Boat and Motor	810	140	2.41	970	240	1.07	1.2	0.36

Table T - 35. Continued.

Activity	Individual-Visits Estimate	Individual-Visits Standard Error	Individual-Visits Percent	Hours Estimate	Hours Standard Error	Hours Percent	Average Length of Visits (Hrs)	Standard Error
Lewis and Clark Event and Trail Tour	180	100	0.54	150	110	0.17	0.8	0.74
Photography	60	26	0.18	50	20	0.06	0.8	0.46
Playground/Telephone/Restroom	330	170	0.98	290	150	0.32	0.9	0.65
Sporting Activities	14	13	0.04	3	3	0.00	0.2	0.32
Dog Training	0	0	0.00	0	0	0.00	--	--
Observed Paddlefish Snagging	0	0	0.00	0	0	0.00	--	--
Geocaching	0	0	0.00	0	0	0.00	--	--
Education Tour	0	0	0.00	0	0	0.00	--	--
Oregon & Calif. Trail Tour	0	0	0.00	0	0	0.00	--	--
Horseback Riding	0	0	0.00	0	0	0.00	--	--
Fireworks	0	0	0.00	0	0	0.00	--	--
Ice Skating	0	0	0.00	0	0	0.00	--	--
Arts & Crafts	0	0	0.00	0	0	0.00	--	--
Releasing Wildlife	0	0	0.00	0	0	0.00	--	--
Model Airplane Flying	0	0	0.00	0	0	0.00	--	--
Motorcycling	0	0	0.00	0	0	0.00	--	--
MO River Relief	0	0	0.00	0	0	0.00	--	--
Non-Consumptive Activities Subtotal	**30,720**	**1,760**	**91.40**	**74,710**	**5,050**	**82.21**	**2.43**	**0.22**
Undefined Use	60	32	0.18	25	15	0.03	0.4	0.38
Work Trip	0	0	0.00	0	0	0.00	--	--
Unknown	0	0	0.00	0	0	0.00	--	--
Overall Total	**33,610**	**1,780**	**100.00**	**90,880**	**5,220**	**100.00**	**2.7**	**0.21**

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Table T - 36. Estimates of successful parties, number of fish caught, number of fish harvested and the harvest rate for different fish species taken from the Missouri River from just south of Dakota City, Nebraska to above Chris Larsen Park boat ramp at Sioux City, Iowa (Nebraska's Segment 6) for the period from January 3, 2004 through January 28, 2005.

Species	Successful Parties	Standard Error	Total Catch	Standard Error	Total Harvest	Standard Error	Harvest Rate (per 100 Hrs)	Standard Error
Paddlefish	0	0	0	0	0	0	0.00	0.00
Lake Sturgeon	23	14	40	27	7	6	0.04	0.04
Shovelnose Sturgeon	560	120	1,030	230	520	130	3.21	0.86
Pallid Sturgeon	23	18	23	18	7[a]	6[a]	0.04[a]	0.04[a]
Shortnose Gar	11	11	22	21	11	11	0.07	0.07
Spotted Gar	0	0	0	0	0	0	0.00	0.00
Longnose Gar	20	10	26	14	12	10	0.07	0.07
Gar sp/pref	0	0	0	0	0	0	0.00	0.00
Bowfin	0	0	0	0	0	0	0.00	0.00
Goldeye	33	30	70	60	0	0	0.00	0.00
Skipjack Herring	270	50	910	230	160	60	0.96	0.35
Gizzard Shad	0	0	0	0	0	0	0.00	0.00
Threadfin Shad	0	0	0	0	0	0	0.00	0.00
Trout sp/pref	0	0	0	0	0	0	0.00	0.00
Bigmouth Buffalo	150	60	370	170	350	170	2.16	1.04
Black Buffalo	0	0	0	0	0	0	0.00	0.00
Smallmouth Buffalo	120	28	130	36	120	28	0.71	0.18
Buffalo sp/pref	0	0	0	0	0	0	0.00	0.00
Quillback	0	0	0	0	0	0	0.00	0.00
River Carpsucker	11	11	22	21	22	21	0.14	0.13
Highfin Carpsucker	11	11	11	11	11	11	0.07	0.07
Carpsucker sp	0	0	0	0	0	0	0.00	0.00
Blue Sucker	12	6	32	23	0	0	0.00	0.00
White Sucker	0	0	0	0	0	0	0.00	0.00
Shorthead Redhorse	0	0	0	0	0	0	0.00	0.00
Carp	1,110	160	2,320	340	910	170	5.65	1.10
Grass Carp	6	7	13	14	0	0	0.00	0.00
Silver Carp	0	0	0	0	0	0	0.00	0.00
Bighead Carp	110	60	310	170	300	170	1.87	1.03

Table T - 36. Continued.

Species	Successful Parties	Standard Error	Total Catch	Standard Error	Total Harvest	Standard Error	Harvest Rate (per 100 Hrs)	Standard Error
Channel Catfish	2,360	200	7,160	540	5,110	450	31.63	3.57
Blue Catfish	50	18	150	80	28	13	0.17	0.08
Catfish sp/pref	0	0	0	0	0	0	0.00	0.00
Black Bullhead	0	0	0	0	0	0	0.00	0.00
Yellow Bullhead	6	7	13	14	13	14	0.08	0.08
Brown Bullhead	0	0	0	0	0	0	0.00	0.00
Bullhead sp/pref	0	0	0	0	0	0	0.00	0.00
Flathead Catfish	180	38	310	70	190	40	1.20	0.28
Grass Pickerel	0	0	0	0	0	0	0.00	0.00
Northern Pike	120	33	220	80	140	50	0.89	0.32
Eel	0	0	0	0	0	0	0.00	0.00
White Perch	4	4	4	4	0	0	0.00	0.00
White Bass	11	7	11	7	0	0	0.00	0.00
Striped Bass Hybrid	0	0	0	0	0	0	0.00	0.00
Yellow Bass	9	9	140	130	0	0	0.00	0.00
Striped Bass	0	0	0	0	0	0	0.00	0.00
Sauger	110	33	140	44	100	35	0.61	0.22
Walleye	80	30	90	34	80	29	0.49	0.18
Spotted Bass	0	0	0	0	0	0	0.00	0.00
Smallmouth Bass	0	0	0	0	0	0	0.00	0.00
Largemouth Bass	26	13	210	140	16	14	0.10	0.09
Warmouth	0	0	0	0	0	0	0.00	0.00
Green Sunfish	0	0	0	0	0	0	0.00	0.00
Bluegill	0	0	0	0	0	0	0.00	0.00
Black Crappie	0	0	0	0	0	0	0.00	0.00
White Crappie	0	0	0	0	0	0	0.00	0.00
Crappie sp/pref	0	0	0	0	0	0	0.00	0.00
Freshwater Drum	220	60	1,610	420	1,580	420	9.79	2.68
Fishing/anything	9	8	9	8	9	8	0.06	0.05
Fish Total	**3,650**	**240**	**15,360**	**900**	**9,690**	**700**	**60.00**	**6.07**

[a] Species is listed as a federal endangered species under the Endangered Species Act, therefore, harvest of this species was not legal. Estimate of harvest reflects what the survey clerk recorded as being reported by the interviewed public user.

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Table T - 37. Socio-demographic characteristics of Missouri River users from just south of Dakota City, Nebraska to above Chris Larsen Park boat ramp at Sioux City, Iowa (Nebraska's Segment 6) for the period from January 3, 2004 through January 28, 2005. Return to page 185.

Characteristic	Estimate	Standard Error	Percent
Age			
0-11 Years Old	1,360	220	4.06
12-15 Years Old	910	170	2.71
16-17 Years Old	630	140	1.88
18-24 Years Old	3,570	310	10.63
25-34 Years Old	6,630	500	19.73
35-44 Years Old	8,200	500	24.41
45-64 Years Old	8,480	640	25.22
65 or Older	3,670	350	10.91
Unknown Age	150	70	0.44
Gender			
Male	23,580	1,140	70.16
Female	9,990	730	29.72
Unknown Gender	40	25	0.12
Race			
White	31,380	1,570	93.37
Black or African-American	410	110	1.21
Hispanic or Latino	1,130	170	3.35
Asian	140	80	0.40
American Indian	520	340	1.55
Other	0	0	0.00
Unknown race	40	25	0.12
Impairment			
No Impairment	31,710	1,640	94.36
Hearing Impaired	1,100	120	3.27
Visually Impaired	150	60	0.44
Learning Impaired	110	100	0.32
Mobility Impaired	330	90	0.98
Other Impairment	150	60	0.44
Unknown Impairment Status	60	29	0.19
Permit Ownership			
Owned a fishing or Hunting Permit	15,260	780	45.40
Did Not own a fishing or hunting permit	18,070	1,230	53.77
Unknown permit ownership status	280	140	0.84

Table T - 38. Estimates of public use for the Missouri River from just upstream from the mouth of the Big Sioux River to Gavins Point Dam near Yankton, South Dakota (Nebraska's Segment 7) for the period from January 3, 2004 through January 28, 2005.

	Individual-Visits			Hours			Average	
Activity	Estimate	Standard Error	Percent	Estimate	Standard Error	Percent	Length of Visits (Hrs)	Standard Error
Fishing								
Rod/Reel - Non-tournament	44,860	3,070	23.25	139,930	8,230	23.11	3.1	0.28
Oth. Methods - Non-tournament	2,430	570	1.26	8,710	2,190	1.44	3.6	1.23
Rod/Reel & Oth. Meths. - Non-tour.	210	100	0.11	860	420	0.14	4.1	2.94
Rod/Reel - Tournament	0	0	0.00	0	0	0.00	--	--
Oth. Methods - Tournament	24	22	0.01	90	90	0.01	3.8	4.95
Rod/Reel & Oth. Meths. - Tour.	0	0	0.00	0	0	0.00	--	--
Commercial	29,160	8,030	15.11	22,300	6,040	3.68	0.8	0.30
Snagging Paddlefish (Nebraska)	4,060	910	2.10	14,230	3,660	2.35	3.5	1.19
Collecting Bait	430	180	0.22	350	150	0.06	0.8	0.48
Fishing Subtotal	**80,760**	**8,690**	**41.86**	**186,460**	**11,360**	**30.79**	**2.3**	**0.29**
Hunting								
Deer, gun or muzzleloader	0	0	0.00	0	0	0.00	--	--
Deer, bow	0	0	0.00	0	0	0.00	--	--
Turkey	6	6	0.00	25	23	0.00	4.2	5.03
Waterfowl	9,130	5,790	4.73	29,440	17,600	4.86	3.2	2.81
Dove	0	0	0.00	0	0	0.00	--	--
Squirrel	0	0	0.00	0	0	0.00	--	--
Rabbit	0	0	0.00	0	0	0.00	--	--
Quail	0	0	0.00	0	0	0.00	--	--
Pheasant	0	0	0.00	0	0	0.00	--	--
Crow	0	0	0.00	0	0	0.00	--	--
Raccoon	0	0	0.00	0	0	0.00	--	--
Fox	0	0	0.00	0	0	0.00	--	--
Predator	0	0	0.00	0	0	0.00	--	--
Other Hunting	0	0	0.00	0	0	0.00	--	--
Hunting Subtotal	**9,130**	**5,790**	**4.73**	**29,460**	**17,600**	**4.86**	**3.23**	**3.88**

Table T - 38. Continued.

Activity	Individual-Visits Estimate	Individual-Visits Standard Error	Individual-Visits Percent	Hours Estimate	Hours Standard Error	Hours Percent	Average Length of Visits (Hrs)	Standard Error
Trapping	8,510	5,760	4.41	2,140	1,440	0.35	0.3	0.24
Frogging	0	0	0.00	0	0	0.00	--	--
Non-Consumptive Activities								
Camping, dept. site	5,230	660	2.71	224,010	34,470	36.99	42.8	8.53
Camping, other	1,030	470	0.53	20,340	8,980	3.36	19.7	12.50
Picnicking, dept. site	400	110	0.21	820	270	0.14	2.1	0.89
Picnicking, other	1,270	540	0.66	5,880	2,970	0.97	4.6	3.07
Swimming	11,720	3,920	6.07	8,510	2,440	1.41	0.7	0.32
Floating	1,140	450	0.59	2,930	1,240	0.48	2.6	1.48
Boating	8,210	1,400	4.26	30,230	5,700	4.99	3.7	0.94
Canoeing	1,480	430	0.77	18,060	8,370	2.98	12.2	6.71
Nature Study	2,240	530	1.16	1,400	380	0.23	0.6	0.23
Loafing	2,040	380	1.06	3,280	960	0.54	1.6	0.56
Sightseeing	43,540	6,950	22.57	36,530	5,120	6.03	0.8	0.18
Cottage Use	0	0	0.00	0	0	0.00	--	--
Off-road Vehicle	80	39	0.04	130	80	0.02	1.6	1.31
Gathering Products	1,270	450	0.66	1,550	420	0.26	1.2	0.54
Target Shooting	8	8	0.00	8	8	0.00	1.0	1.37
Rappelling	0	0	0.00	0	0	0.00	--	--
Caving	0	0	0.00	0	0	0.00	--	--
Waterskiing	950	560	0.49	4,210	3,360	0.70	4.4	4.38
Biking	1,050	250	0.54	950	270	0.16	0.9	0.34
Jet Skiing	210	140	0.11	530	380	0.09	2.5	2.43
Sunbathing	650	250	0.34	1,560	720	0.26	2.4	1.46
Partying	490	350	0.25	1,950	1,350	0.32	4.0	3.92
Hiking	980	280	0.51	1,000	220	0.17	1.0	0.37
Exercising	4,420	1,160	2.29	3,980	1,230	0.66	0.9	0.36
Preparing for Hunting Season	2,760	1,090	1.43	6,080	2,270	1.00	2.2	1.20
Tuning (or trying out) Boat and Motor	300	110	0.16	270	120	0.04	0.9	0.53

Table T - 38. Continued.

Activity	Visits			Hours			Average Length of Visits	Standard Error
	Estimate	Standard Error	Percent	Estimate	Standard Error	Percent		
Lewis and Clark Event and Trail Tour	590	470	0.31	1,090	600	0.18	1.8	1.79
Photography	380	140	0.20	200	50	0.03	0.5	0.25
Playground/Telephone/Restroom	1,470	530	0.76	810	160	0.13	0.6	0.23
Sporting Activities	120	60	0.06	100	40	0.02	0.8	0.51
Dog Training	720	480	0.37	490	350	0.08	0.7	0.67
Observed Paddlefish Snagging	5,020	1,770	2.60	7,470	2,590	1.23	1.5	0.74
Geocaching	0	0	0.00	0	0	0.00	--	--
Education Tour	0	0	0.00	0	0	0.00	--	--
Oregon & Calif. Trail Tour	0	0	0.00	0	0	0.00	--	--
Horseback Riding	0	0	0.00	0	0	0.00	--	--
Fireworks	0	0	0.00	0	0	0.00	--	--
Ice Skating	0	0	0.00	0	0	0.00	--	--
Arts & Crafts	0	0	0.00	0	0	0.00	--	--
Releasing Wildlife	18	16	0.01	18	16	0.00	1.0	1.32
Model Airplane Flying	0	0	0.00	0	0	0.00	--	--
Motorcycling	0	0	0.00	0	0	0.00	--	--
MO River Relief	0	0	0.00	0	0	0.00	--	--
Non-Consumptive Activities Subtotal	**93,510**	**8,970**	**48.47**	**384,380**	**40,890**	**63.48**	**4.11**	**0.59**
Undefined Use	3,100	650	1.61	3,110	640	0.51	1.0	0.30
Work Trip	50	21	0.03	190	110	0.03	3.8	2.84
Unknown	0	0	0.00	0	0	0.00	--	--
Overall Total	**192,940**	**12,790**	**100.00**	**605,560**	**45,620**	**100.00**	**3.1**	**0.31**

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Table T - 39. Estimates of successful parties, number of fish caught, number of fish harvested and the harvest rate for different fish species taken from the Missouri River from just upstream from the mouth of the Big Sioux River to Gavins Point Dam near Yankton, South Dakota (Nebraska's Segment 7) for the period from January 3, 2004 through January 28, 2005.

Species	Successful Parties	Standard Error	Total Catch	Standard Error	Total Harvest	Standard Error	Harvest Rate (per 100 Hrs)	Standard Error
Paddlefish	3,960	740	16,130	3,450	2,750	720	1.47	0.40
Lake Sturgeon	10	10	10	10	0	0	0.00	0.00
Shovelnose Sturgeon	70	50	70	50	60	40	0.03	0.02
Pallid Sturgeon	50	29	50	29	0[a]	0[a]	0.00[a]	0.00[a]
Shortnose Gar	290	70	620	190	40	20	0.02	0.01
Spotted Gar	0	0	0	0	0	0	0.00	0.00
Longnose Gar	290	120	590	240	110	60	0.06	0.03
Gar sp/pref	0	0	0	0	0	0	0.00	0.00
Bowfin	0	0	0	0	0	0	0.00	0.00
Goldeye	760	190	3,940	1,070	1,150	670	0.62	0.36
Skipjack Herring	1,070	140	4,210	1,380	390	110	0.21	0.06
Gizzard Shad	22	15	60	50	11	11	0.01	0.01
Threadfin Shad	0	0	0	0	0	0	0.00	0.00
Trout sp/pref	38	38	38	38	32	37	0.02	0.02
Bigmouth Buffalo	130	60	250	120	90	50	0.05	0.03
Black Buffalo	39	16	90	40	0	0	0.00	0.00
Smallmouth Buffalo	160	50	530	220	150	90	0.08	0.05
Buffalo sp/pref	0	0	0	0	0	0	0.00	0.00
Quillback	510	470	1,020	930	0	0	0.00	0.00
River Carpsucker	60	40	100	50	0	0	0.00	0.00
Highfin Carpsucker	0	0	0	0	0	0	0.00	0.00
Carpsucker sp	0	0	0	0	0	0	0.00	0.00
Blue Sucker	530	470	540	470	0	0	0.00	0.00
White Sucker	27	13	40	21	28	18	0.02	0.01
Shorthead Redhorse	40	24	120	70	50	39	0.02	0.02
Carp	2,730	210	8,280	850	3,720	520	1.99	0.30
Grass Carp	160	110	820	720	90	80	0.05	0.04
Silver Carp	120	60	270	180	40	29	0.02	0.02
Bighead Carp	350	160	1,260	790	380	150	0.20	0.08

Table T - 39. Continued.

Species	Successful Parties	Standard Error	Total Catch	Standard Error	Total Harvest	Standard Error	Harvest Rate (per 100 Hrs)	Standard Error
Channel Catfish	3,880	320	14,830	1,840	6,170	670	3.31	0.41
Blue Catfish	670	470	810	490	270	160	0.14	0.09
Catfish sp/pref	0	0	0	0	0	0	0.00	0.00
Black Bullhead	120	80	530	320	100	60	0.05	0.03
Yellow Bullhead	60	31	220	130	0	0	0.00	0.00
Brown Bullhead	0	0	0	0	0	0	0.00	0.00
Bullhead sp/pref	0	0	0	0	0	0	0.00	0.00
Flathead Catfish	100	34	170	70	110	70	0.06	0.04
Grass Pickerel	0	0	0	0	0	0	0.00	0.00
Northern Pike	39	26	39	26	39	26	0.02	0.01
Eel	0	0	0	0	0	0	0.00	0.00
White Perch	9	7	9	7	0	0	0.00	0.00
White Bass	1,630	140	5,110	800	3,340	720	1.79	0.40
Striped Bass Hybrid	220	50	610	140	260	90	0.14	0.05
Yellow Bass	70	25	240	70	100	50	0.05	0.03
Striped Bass	270	60	760	230	510	190	0.27	0.10
Sauger	610	100	1,630	320	720	200	0.39	0.11
Walleye	3,510	240	12,850	1,420	5,370	700	2.88	0.42
Spotted Bass	0	0	0	0	0	0	0.00	0.00
Smallmouth Bass	190	70	1,610	810	590	350	0.31	0.19
Largemouth Bass	230	80	1,040	380	190	120	0.10	0.06
Warmouth	16	10	60	34	13	14	0.01	0.01
Green Sunfish	110	80	220	110	50	40	0.02	0.02
Bluegill	330	60	2,270	650	860	320	0.46	0.18
Black Crappie	270	50	910	240	500	130	0.27	0.07
White Crappie	50	23	50	24	50	23	0.02	0.01
Crappie sp/pref	0	0	0	0	0	0	0.00	0.00
Freshwater Drum	2,940	190	11,160	1,080	5,650	650	3.03	0.39
Fishing/anything	120	50	560	320	200	80	0.11	0.04
Fish Total	**44,290**	**4,460**	**94,720**	**5,220**	**34,130**	**1,890**	**18.30**	**1.51**

[a] Species is listed as a federal endangered species under the Endangered Species Act, therefore, harvest of this species was not legal. Estimate of harvest reflects what the survey clerk recorded as being reported by the interviewed public user.

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Table T - 40. Estimates of successful hunting parties, number of wildlife shot or trapped, number harvested and the harvest rate for different wildlife species taken by hunters on the Missouri River from just upstream from the mouth of the Big Sioux River to Gavins Point Dam near Yankton, South Dakota (Nebraska's Segment 7) for the period from January 3, 2004 through January 28, 2005.

Species	Successful Parties	Standard Error	Total Shot/ Trapped	Standard Error	Total Harvest	Standard Error	Harvest Rate (per 100 Hrs)	Standard Error
White-tailed Deer	0	0	0	0	0	0	0.00	0.00
Squirrel	0	0	0	0	0	0	0.00	0.00
Rabbit	0	0	0	0	0	0	0.00	0.00
Raccoon	0	0	0	0	0	0	0.00	0.00
Beaver	7	6	7	6	7	6	0.02	0.03
Mink	0	0	0	0	0	0	0.00	0.00
Bobcat	0	0	0	0	0	0	0.00	0.00
Red Fox	0	0	0	0	0	0	0.00	0.00
Opossum	0	0	0	0	0	0	0.00	0.00
Coyote	0	0	0	0	0	0	0.00	0.00
Mourning Dove	0	0	0	0	0	0	0.00	0.00
Bobwhite Quail	0	0	0	0	0	0	0.00	0.00
Crow	0	0	0	0	0	0	0.00	0.00
Turkey	0	0	0	0	0	0	0.00	0.00
Pheasant	0	0	0	0	0	0	0.00	0.00
Mallard	4,250	2,880	4,250	2,880	4,250	2,880	14.42	13.03
Wigeon	20	23	20	23	20	23	0.07	0.09
Blue-Winged Teal	0	0	0	0	0	0	0.00	0.00
Green-Winged Teal	20	23	20	23	20	23	0.07	0.09
Pintail	0	0	0	0	0	0	0.00	0.00
Shoveler	0	0	0	0	0	0	0.00	0.00
Gadwall	0	0	0	0	0	0	0.00	0.00
Wood Duck	0	0	0	0	0	0	0.00	0.00
Redhead	0	0	0	0	0	0	0.00	0.00
Ring-Necked Duck	20	23	20	23	20	23	0.07	0.09
Greater Scaup	0	0	0	0	0	0	0.00	0.00
Lesser Scaup	0	0	0	0	0	0	0.00	0.00
Goldeneye	0	0	0	0	0	0	0.00	0.00
Bufflehead	0	0	0	0	0	0	0.00	0.00

Table T - 40. Continued.

Species	Successful Parties	Standard Error	Total Shot/ Trapped	Standard Error	Total Harvest	Standard Error	Harvest Rate (per 100 Hrs)	Standard Error
Common Merganser	0	0	0	0	0	0	0.00	0.00
Other Ducks	0	0	0	0	0	0	0.00	0.00
Canada Goose	0	0	0	0	0	0	0.00	0.00
Snow Goose	590	540	4,730	4,330	4,730	4,330	16.06	17.56
Ross Goose	0	0	0	0	0	0	0.00	0.00
Coot	0	0	0	0	0	0	0.00	0.00
Woodcock	0	0	0	0	0	0	0.00	0.00
Turtle	0	0	0	0	0	0	0.00	0.00
Clam	0	0	0	0	0	0	0.00	0.00
Hunting/Unknown	0	0	0	0	0	0	0.00	0.00
Hunting Total	4,870	2,930	9,050	5,210	9,050	5,210	**30.71**	**25.46**
Frog	0	0	0	0	0	0	0.00	0.00
Frogging Total	**0**	**0**	**0**	**0**	**0**	**0**	**0.00**	**0.00**

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Table T - 41. Socio-demographics of Missouri River users from just upstream from the mouth of the Big Sioux River to Gavins Point Dam near Yankton, South Dakota (Nebraska's Segment 7) for the period from January 3, 2004 through January 28, 2005. Return to page 186.

Characteristic	Estimate	Standard Error	Percent
Age			
0-11 Years Old	8,550	1,060	4.43
12-15 Years Old	5,620	730	2.91
16-17 Years Old	2,350	280	1.22
18-24 Years Old	40,400	9,370	20.94
25-34 Years Old	23,840	2,940	12.35
35-44 Years Old	46,820	5,130	24.27
45-64 Years Old	52,060	5,130	26.98
65 or Older	12,990	1,400	6.73
Unknown Age	320	200	0.16
Gender			
Male	146,190	10,770	75.77
Female	46,190	8,180	23.94
Unknown Gender	550	230	0.29
Race			
White	180,170	11,940	93.38
Black or African-American	1,760	1,090	0.91
Hispanic or Latino	5,020	1,960	2.60
Asian	1,060	180	0.55
American Indian	920	190	0.48
Other	3,250	1,950	1.69
Unknown race	760	260	0.40
Impairment			
No Impairment	171,230	11,520	88.75
Hearing Impaired	17,770	4,180	9.21
Visually Impaired	280	60	0.14
Learning Impaired	90	31	0.04
Mobility Impaired	1,710	270	0.88
Other Impairment	840	110	0.44
Unknown Impairment Status	1,030	250	0.53
Permit Ownership			
Owned a fishing or Hunting Permit	122,430	9,920	63.46
Did Not own a fishing or hunting permit	55,640	8,550	28.84
Unknown permit ownership status	14,860	4,110	7.70

Table T - 42. Measures of public use per kilometer and per mile by segment on the Missouri River based upon information collected at public accesses and areas. Estimates of standard errors are in parentheses, except when reporting number of miles in each segment.

River Segment	Kilometers (Miles)	Parties/km	Parties/mile	Individual-Visits/km	Individual-Visits/mile	Individual-Hours/km	Individual-Hours/mile
A	214 (150)	1,220 (50)	1,950 (80)	2,080 (90)	3,340 (140)	4,460 (620)	7,160 (990)
B	181 (112)	530 (35)	860 (60)	980 (60)	1,580 (110)	4,070 (660)	6,590 (1,070)
C	272 (169)	480 (23)	770 (38)	810 (38)	1,310 (60)	1,430 (100)	2,300 (170)
D	196 (122)	910 (40)	1,470 (70)	1,670 (90)	2,680 (140)	5,361 (360)	8,610 (590)
1	101 (63)	460 (34)	740 (60)	870 (70)	1,390 (110)	6,130 (590)	9,820 (940)
2	68 (42)	1,200 (50)	1,950 (150)	2,060 (170)	3,330 (270)	6,440 (1,020)	10,430 (1,660)
3	57 (36)	780 (60)	1,230 (100)	2,920 (120)	4,630 (200)	8,450 (600)	13,380 (950)
5	133 (83)	540 (35)	860 (60)	980 (70)	1,570 (100)	9,130 (2,220)	14,630 (3,560)
6	16 (10)	1,260 (70)	2,020 (110)	2,100 (110)	3,360 (180)	5,680 (330)	9,090 (520)
7	124 (77)	790 (50)	1,280 (80)	1,560 (100)	2,510 (170)	4,880 (370)	7,860 (590)

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Table T - 43. Measures of economic benefits public users realized from the Missouri River on a per kilometer and mile basis using estimates from public accesses and areas. Consumer surplus was estimated using the travel cost method and willingness-to-pay was estimated using the discrete choice model. Estimates of bootstrap 95 percent confidence intervals are in parentheses, except when reporting number of miles in each segment.

River Seg.	Km (Miles)	Consumer Surplus/km	Consumer Surplus/mile	Willingness-to-pay/km	Willingness-to-pay/mile
A	214	$20,000	$28,530	$56,400	$80,460
	(150)	($18,020, $21,960)	($25,700, $31,330)	($56,400, $46,080)	($65,750, $95,570)
B	181	$10,480	$16,930	$13,160	$21,260
	(112)	($9,130, $11,880)	($14,760, $19,200)	($13,160, $8,950)	($14,470, $28,170)
C	272	$6,590	$10,600	$18,190	$29,280
	(169)	($5,900, $7,290)	($9,490, $11,730)	($18,190, $15,120)	($24,330, $34,480)
D	196	$20,170	$32,400	$30,790	$49,460
	(122)	($16,790, $23,830)	($26,980, $38,280)	($30,790, $22,860)	($36,720, $63,010)
1	101	$15,100	$24,210	$18,570	$29,770
	(63)	($12,650, $18,040)	($20,280, $28,930)	($18,570, $13,030)	($20,890, $39,640)
2	68	$26,590	$43,050	$24,310	$39,370
	(42)	($20,070, $35,090)	($32,490, $56,810)	($24,310, $15,810)	($25,600, $54,340)
3	57	$26,140	$41,390	$55,720	$88,220
	(36)	($16,340, $46,850)	($25,880, $74,180)	($55,720, $44,450)	($70,370, $106,360)
5	133	$14,470	$23,190	$8,480	$13,580
	(83)	($9,780, $19,040)	($15,680, $30,510)	($8,480, $4,470)	($7,160, $19,760)
6	16	$9,920	$15,870	$70,060	$112,100
	(10)	($8,220, $11,200)	($13,160, $17,920)	($70,060, $61,590)	($98,540, $125,550)
7	124	$15,190	$24,470	$31,440	$50,640
	(77)	($13,780, $16,730)	($22,190, $26,940)	($31,440, $20,400)	($32,860, $71,660)

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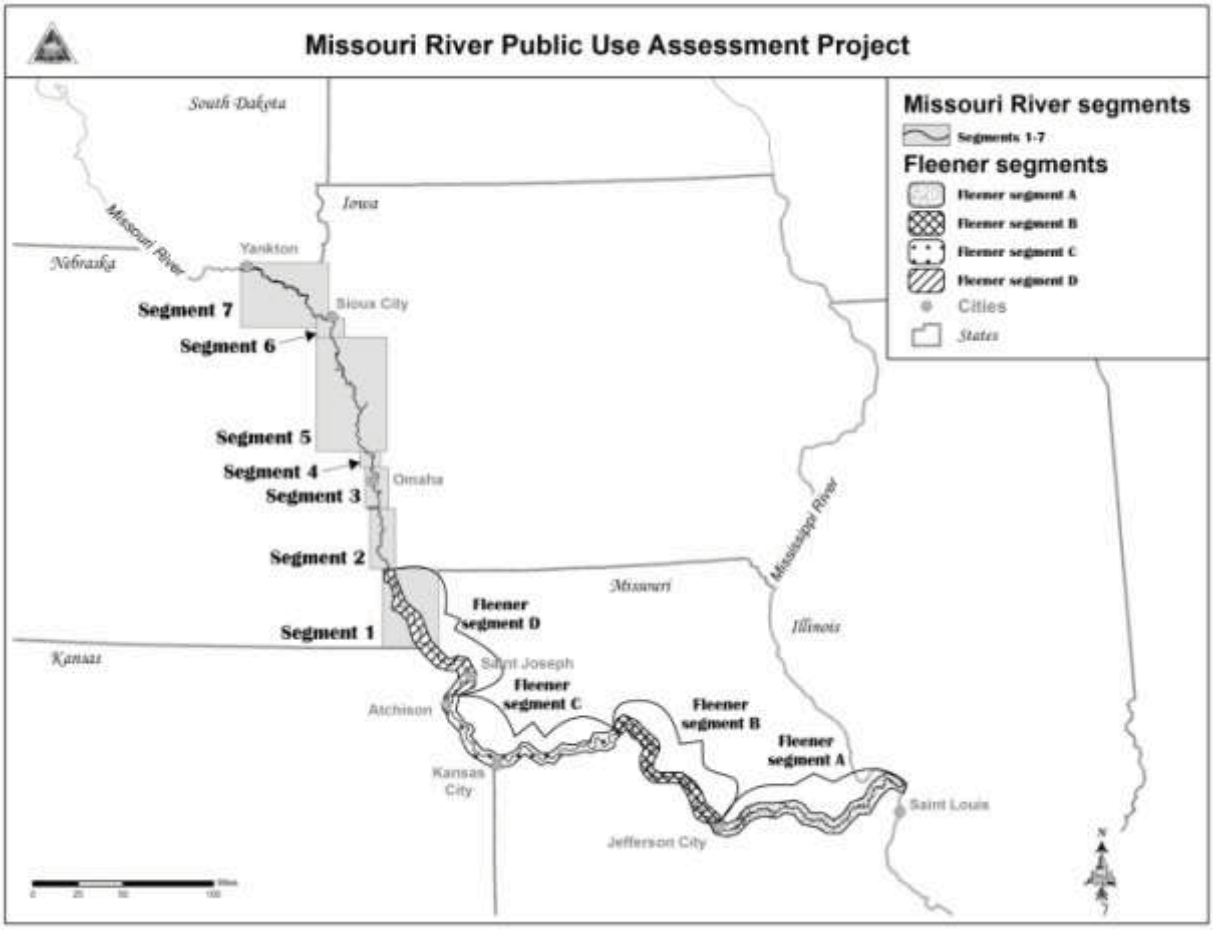
Figures

Figure T - 1. Segments of the Missouri River in which results of the 2004-2005 Missouri River Public Use Survey were divided for reporting purposes. Return to page 168.



Appendix U. Economic impacts of public use on the Missouri River.

Although the Missouri River Public Use Assessment did not include an expenditure survey, expenditure data from other sources can be used to estimate the total economic impact of recreational river use. First it is important to understand the difference between the economic benefits (to users) that were estimated from our study and economic impacts. Economic benefits can best be understood as the consumer surplus gained by a user from the free provision of recreational river use. No one charges anglers, hunters, boaters, or sightseers an entrance fee to use the river – but their behavior, as well as their answers to the discrete choice question included in the survey indicate that they have a positive "willingness-to-pay" (WTP) for their use. As an analogy, imagine a hot day that has made you very thirsty. You tell yourself, with complete honesty, that you'd be willing to pay $5 for a cold drink right now! Then imagine turning a corner to come upon a soda machine selling cold drinks for $1. You buy one and are $4 better off – you were willing-to-pay $5 but the drink only cost $1. That $4 is "consumer surplus." The sum of all of these surpluses, across all of the river users is the total economic benefit of the river to those users.

But river users do spend money to get to and enjoy the river, even if there is no entrance fee. Gasoline, food, lodging, angling or hunting gear, and the like probably make up the bulk of their expenditures. The economic impact of those users' spending is a different calculation. Their purchases drive a "multiplier model." Industries that produce goods and services for river user consumption must purchase products, raw materials, and services from other companies to create these products. The vendors must also procure goods and services. This cycle continues until all the money is leaked from the region's economy. There are three types of effects measured with

a multiplier: the direct, the indirect, and the induced. The direct effect is the known or predicted change in the regional economy. The indirect effect is the business-to-business transactions required to satisfy the direct effect. Finally, the induced effect is derived from local spending on goods and services by people working to satisfy the direct and indirect effects. "Multipliers" are a numeric way of describing the impact of the river users' spending. For example, an employment multiplier of 1.8 says for every 10 employees hired to meet the direct spending of the river users, 18 total jobs (in all sectors) would be supported in the region (ten Raa 2006; USDOC 1997).

Estimating multipliers requires knowing how much river users spend. Normally this is done using an expenditure survey where users are asked, as they leave a site, to complete at home a survey listing all their trip-related expenditures (after all their expenses are known). Due to the greatly increased costs such a survey would have imposed on the Missouri River Public Use Assessment and the additional burden upon the visitors to the river, no expenditure survey was done. However, we can make estimates of the economic impacts of recreational river use if we are willing to assume that Missouri River users are similar to typical anglers, hunters and wildlife-watchers characterized by the National Survey of Fishing, Hunting, and Wildlife-Associated Recreation for both 2001 and 2006 in both Missouri and Nebraska (USDOI 2003a; USDOI 2003b; USDOI 2008a; USDOI 2008b). For that survey, interviews were conducted with samples of likely anglers, hunters, and wildlife-watchers that were identified during an initial screening phase. Interviews were conducted primarily by telephone, with in-person interviews for those respondents who could not be reached by telephone. Each respondent provided information pertaining only to his or her activities and expenditures during 2001 or 2006

depending on the survey year. Sample sizes were designed to provide statistically reliable results at the state level. We adjusted the numbers from these surveys into 2004 dollars and used the average between the two survey years. According to this manipulated National Survey, expenditures ranged from almost $16 per day for wildlife-watchers in Missouri to over $32 for hunters in Nebraska (Table U-1, page 282).

If we are willing to assume that Missouri River users are like other anglers, hunters, and wildlife-watchers in the states of Missouri and Nebraska and that non-consumptive users on the river can be characterized as wildlife-watchers, then these expenditure numbers can be used to estimate the overall economic impact of public use of the Missouri River. For further simplification we will assume that all users made their expenditures in those two states. Using the results of the Missouri River Public Use Assessment, we can calculate the total expenditures along the 811-mile stretch of the river (Table U-2, page 283).

To estimate economic impacts, we used IMPLAN software and data for Missouri collected by the U. S. Bureau of Economic Analysis, the U. S. Bureau of Labor Statistics, and the U. S. Department of Agriculture, and compiled by the Minnesota IMPLAN Group and Missouri Department of Conservation. Without similar data from Nebraska, we assume that the multipliers there are the same as those for Missouri. The results, in 2004 dollars, are shown in Table U-3 (page 284).

River users spent an estimated $38.4 million (in 2004 dollars) on their Missouri River trips to the 811-mile stretch river, yielding a total economic impact of $68.1 million, an output multiplier

effect of 1.77. Their direct spending supported 860 jobs (full-time equivalents or FTEs) and had a total employment effect of 579 FTEs, an employment multiplier of 1.49 (Table U-3, page 284).

Neither IMPLAN nor the authors have figures on actual tax receipts, but IMPLAN produced estimates of taxes generated by public use of the river based on linear models of the entire economy. Direct and indirect spending and income from river use by users of the Missouri River accounted for an estimated $5 million in state and local tax revenues and $5.2 million in Federal tax revenues (Table U-4, page 285).

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Table U - 1. Daily expenses of anglers, hunters, and wildlife-watchers on away-from-residence trips expressed in 2004 dollars. Sources were the 2001 and 2006 National Survey of Fishing, Hunting, and Wildlife-associated Recreation.

Missouri

Expense	Anglers	Hunters	Watchers
Food & Lodging	$11.99	$9.47	$6.75
Transport	$7.43	$8.24	$6.36
Sporting Goods	$3.70	$3.33	$1.44
Other	$5.41	$3.65	$1.16
Totals	**$28.53**	**$24.69**	**$15.71**

Nebraska

Expense	Anglers	Hunters	Watchers
Food & Lodging	$12.65	$11.00	$7.12
Transport	$9.57	$13.99	$8.73
Sporting Goods	$2.21	$5.54	$4.42
Other	$4.43	$1.71	$0.68
Totals	**$28.86**	**$32.24**	**$20.95**

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Table U - 2. Total visits and expenditures of anglers, hunters, and wildlife-watchers on away-from- residence trips expressed in 2004 dollars.

Missouri

Expense	Visits	Expenditures
Fishing	284,250	$8,108,210
Hunting	35,440	$875,090
Non-consumptive	834,360	$13,106,070
Totals	**1,154,050**	**$22,089,370**

Nebraska

Expense	Visits	Expenditures
Fishing	153,470	$4,428,630
Hunting	63,400	$2,044,200
Non-consumptive	468,920	$9,823,500
Totals	**685,790**	**$16,296,330**

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Table U - 3. Economic impacts realized of recreational use of the Missouri River in 2004 dollars.

Missouri

Impact Type	Employment	Output
Direct Effect	330	$22,089,980
Indirect Effect	80	$8,691,820
Induced Effect	80	$8,416,940
Total Effect	**490**	**$39,198,740**

Nebraska

Impact Type	Employment	Output
Direct Effect	250	$16,296,330
Indirect Effect	60	$6,412,180
Induced Effect	60	$6,209,390
Total Effect	**370**	**$28,917,900**

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Table U - 4. Estimated annual tax impacts in 2004 dollars of recreational use of the Missouri River.

Missouri

Tax Type	State and Local	Federal
Employee Compensation	$37,900	$1,169,730
Proprietor Income	$0	$62,480
Indirect Business Tax	$2,376,200	$402,760
Households	$285,510	$757,800
Corporations	$208,890	$632,260
Total	**$2,908,490**	**$3,025,030**

Nebraska

Tax Type	State and Local	Federal
Employee Compensation	$27,960	$862,940
Proprietor Income	$0	$46,090
Indirect Business Tax	$1,752,980	$297,130
Households	$210,630	$559,040
Corporations	$154,100	$466,430
Total	**$2,145,670**	**$2,231,640**

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